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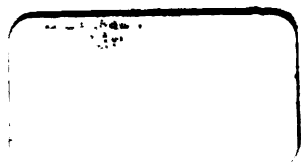
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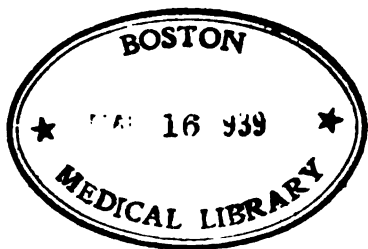


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EDITOR AND PROPRIETOR

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By J. D. Emmert, M.D.

THE · THERAPEUTIC · FORUM

The object of this Department is, as it has been heretofore announced, to give to the profession an opportunity to obtain independent criticism and information, especially in regard to the newer therapeutic agents, which shall be free from prejudice and from the suggestion of the manufacturers.

All communications from reputable physicians will be received, if the authors' names be signed to the articles. In all cases where the request is made, the names of such contributors will be withheld from publication.

ORIGINAL COMMUNICATIONS.

THE THERAPEUTIC VALUE OF THE HYPOPHOSPHITES— WITH CLINICAL ILLUSTRATIONS.

BY A. W. DUVAL, M.D., PHILADELPHIA.

The prevalent idea that the hypophosphites are of value in certain conditions of emaciation and depraved nutrition, because they furnish to the tissues *directly* those ingredients which have been consumed in the process of metabolism, is erroneous and has an important bearing on the intelligent use of these most important remedies. The hypophosphites are primarily and chiefly valuable as therapeutic agents because they represent the best form in which to administer *oxidizable phosphorus* which fulfills an important, in fact, indispensable rôle in metabolism by seizing and storing oxygen necessary to carry on the all-important process of oxidation. Phosphorus, itself, even if chemically pure, is but poorly adapted to the above purpose, because in order to be absorbed it must first be converted into the form of a hypophosphite, the laboratory for which conversion is in such instances a weakened atonic stomach. The phosphates, so frequently administered, are of no value because they represent a phosphide element after oxidation—they are literally and chemically *ashes*—destitute of oxidizing power and, therefore, of no remedial value. Routine, indiscriminate use of hypophosphite cannot be too strongly deprecated; they are in selected cases of positive indisputable value as tonics and reconstructives. However, when given in too large doses they exaggerate existing pathologic conditions and defeat the objects desired.

The therapeutic action of the hypophosphites is to completely change existing systemic conditions; they increase appetite, improve digestion, stimulate hæmatosis, and produce a marked increase of nervous energy. The composite effect is that of plethora: increase of weight and strength is a natural consequence. In prescribing hypophosphites it is of the utmost importance to discriminate in favor of a preparation which is chemically pure and neutral. The ordinary commercial hypophosphites are, according to Churchill, the highest authority on the subject, of no therapeutic value. Syrup of hypophosphites (McArthur) was selected in treating the following cases because it represents chemically and pharmaceutically, in my opinion, an ideal preparation of hypophosphites.

Case I.—Woman, æt. 34. Family history negative. Had always enjoyed good health until three years ago, when one week after her marriage, she contracted a "cold" and since then has had severe cough associated with loss of flesh and strength, night-sweats, anorexia, constipation, average pulse of 94, and a temperature of 99.5°. Physical examination revealed dulness, prolonged expiration, bronchial breathing, and râles in right apex. Examination of sputum showed large numbers of tubercle bacilli.

Diagnosis: Pulmonary tuberculosis.

Treatment: McArthur's Hypophosphites two drachms four times daily with tablespoonful of whisky. Codeine phos. $\frac{1}{4}$ gr. in tablet form was administered whenever cough was troublesome. Within two weeks the patient's appetite increased, digestion was improved, she became much stronger, and four weeks after beginning treatment she had gained four pounds in weight and was able to take a journey for climatic change. Hypophosphites continued.

Case II.—Man, æt. 28. Father died of pulmonary tuberculosis; mother and sister living and well. Patient has always enjoyed good health until May, 1899, when he fell from a bicycle and sustained compound fracture of the lower jaw. Coincident with this a number of cervical glands became enlarged, suppurated and broke leaving two sinuses. Meanwhile his general health became greatly impaired; he lost flesh and strength and became much emaciated. In September he was placed on McArthur's Hypophosphites and began to improve immediately. After the second bottle he had gained 11 (eleven) pounds in weight and the sinuses closed under ordinary antiseptic treatment.

Case III.—Domestic, æt. 22. Family history tubercular. Came for treatment in September, on account of attack of articular rheumatism which yielded to salicylates but left the patient in a weakened, anæmic condition. September 27, was placed on McArthur's Hypo-

phosphites, two drachms, q. i. d., which was continued until she had taken two bottles, at which time she had so far recovered that treatment was no longer necessary.

Case IV.—Woman, æt. 24, was delivered of her second child September 22, 1899. Patient has always been frail; two pregnancies completely ruined her health. There was no mammary secretion, and there were present dyspeptic symptoms, palpitation, irregular heart action, and prolonged puerperium from exhaustion. She was carefully nursed and placed upon McArthur's Hypophosphites, two drachms q. i. d. She has taken three bottles and up to November 18, had gained 11 (eleven) pounds in weight, had abundant secretion of milk, and is now in better health than ever before.

Cases V. and VI., aged respectively 33 and 28, were weak, anæmic women with subinvolution and endometritis upon whom curettage had been practised. McArthur's Hypophosphites was given in two drachms doses four times daily, and convalescence was rapid and uncomplicated. The remedy was continued with the result that the patients have increased in weight, have gained strength and are in better physical condition. Treatment continued.

Cases VII., VIII., IX., and X. are patients with pulmonary tuberculosis in various advanced stages. Other than purely symptomatic treatment, McArthur's Hypophosphites is the only remedy employed. In three of these cases constitutional and local symptoms have become much improved and there has been a slight increase in weight. Treatment is of course continued.

The conclusions which may be safely drawn from an extensive trial of McArthur's Hypophosphites are that it offers effective tonic and reconstructive medication for pulmonary tuberculosis in which disease it very materially improves symptoms and general condition. It is a neutral, chemically pure syrup of hypophosphites which seems to agree with the patient and causes no disturbances. The dose in pulmonary tuberculosis should not exceed two drachms, three or four times daily.

GLYCO-THYMOLINE—ITS USE IN HÆMORRHOIDS.

BY EDWIN ROSENTHAL, M.D., PHILADELPHIA, PA.

In the treatment of rectal diseases many methods besides the surgical have been advised, with more or less success. And in the treatment of such cases, we always reserve as a last resort the use of the knife.

In hæmorrhoids, the general practitioner is most frequently called for treatment and to express an opinion. It is in this class of cases that so little attention has been given and so little notice taken, that the treatment has been permitted to fall into the hands of the charlatan and the quack. Few cities are too small to boast of one or two rectal specialists (so-called) who make a specialty of "Piles treated while you wait," and "Fistula in Ano treated without the knife," etc. The fault is mostly our own, and it belongs to the general physician to reclaim from the hands of the quack those patients who are so numerous and who have left them simply because so little attention was given to their wants. Hæmorrhoids are so well-known that it would be a useless waste of time to describe their variety, cause or origin. Very few indeed are they who can claim to be totally free from some sort of sign of this disorder, and the number seeking relief are so many that it is not strange that the manufacturers of "Pile Ointments" and the like are equally numerous. If the remedies were as truthful as the the advertisements say, there would be little necessity for the number of specialists or specifics. What the physician is most interested in is a method of treatment, easy, ready to be applied and understood. For treatment, it is well to divide the disease into two classes, external and internal. All symptoms, such as itching, bleeding, etc., are simply signs of the condition and not the disease. In many instances, however, these signs are of greater significance than the disease and, therefore, it is always well to bear this in mind. For instance, in a case of "bleeding piles," the patient's only complaint was the loss of blood. The cause was entirely lost sight of, and in cases of "itching piles" the only complaint was the intense itching that was to be relieved. In acute cases, whether internal or external, the fact was better known and in these cases the diseased hæmorrhoids were the ones to be treated.

Many instances can be given but, as the remedy used was the only one, its application and virtues can be best spoken of. The method of using the "Glyco-Thymoline" was by either direct application or internally in teaspoonful doses, well diluted with water. As a direct application, it was applied alone soaked upon pieces of absorbent cotton, or diluted with water and injected into the rectum thrice daily. When used undiluted, a small pledget of cotton was thoroughly saturated and pushed into the anal opening. Or, if it be an external pile, a compress was made and placed directly on the affected part. As an injection, a tablespoonful of the glyco-thymoline was diluted with an equal part of pure water and an infant syringe-full injected into the rectum. It was then permitted to remain, though frequently, after an

interval, it was rejected. Since the causes of hæmorrhoids were invariably due to some congested condition of the alimentary canal or the liver, a purge was invariably given, followed by teaspoonful doses of the glyco-thymoline every two or three hours. The direct applications were followed in many instances by immediate relief. And in acute cases, such as follow after childbirth, the relief was more pronounced. In these cases, injections of the diluted solution was immediately begun and a compress was applied almost constantly. The result was in the majority of instances most satisfactory. Where hæmorrhoids did not exist prior to this time, a cure could be pronounced. Where, however, the attack was only an additional one, and the condition a chronic one, the relief was only temporary. But in all instances there was relief.

When the glyco-thymoline is applied in full strength, there is a sense of warmth, followed by a coolness in the affected parts. This explains the method of its action. It causes at once a contraction of the capillaries of the parts, with a rapid exosmosis of serum from the engorged tissues. When applied with the aid of a speculum, the congested mucous membrane very soon looks pale and so continues as long as the remedy is applied. Normal circulation is resumed after a while and resolution takes place without suppuration. In cases of "inflamed piles" the relief was most marked. Indeed, I have had two occasions to note the good results. In both instances, suppuration was already advanced, with an abscess resulting. This being opened and treated on general surgical principles promptly healed. In both instances the glyco-thymoline was the only dressing used. Both were young men, free from any specific (tubercular or syphilitic) diseases. One was addicted to alcohol, whilst the other, a blacksmith, lays the cause to his work. Six weeks' time was consumed before a cure was pronounced. This I considered good, where it is well known a fistula most frequently results. I had occasion to note a third case, belonging to this category, which ended unfortunately fatally. This was in a man 70 years old. An inflamed hæmorrhoid was the diagnosis made by myself, as well as others. My application of the glyco-thymoline was, however, rejected. Recourse was had to poultices. Suppuration, ulceration and gangrene followed each other in succession. Operation, by myself, was refused and this patient was removed to the Pennsylvania Hospital and operated upon, but too late to save. Instances of this kind can be multiplied; sufficient to summarize: If it is desired to employ a perfectly bland, non-irritating antiseptic to the abraded or inflamed mucous membrane the glyco-thymoline will be found to be not only a

useful but a beneficial agent and especially so when it is desired to have in addition a non-poisonous and non-irritant deodorant.

No. 517 Pine street, Philadelphia, Pa.

SUBSTITUTION.

The following news item, reprinted from the *Chicago Times-Herald* of October 13, 1899, is of unusual interest to physicians, druggists and manufacturers inasmuch as it establishes a precedent whereby similar violations of the golden rule of reciprocity may be summarily replaced by the judicial rule of retaliation.

"Punished for Substitution.—A decision of considerable importance was made by Judge Kohlsaatz in the United States Circuit Court yesterday. In a bill for an injunction Fairchild Brothers & Foster of New York had charged Edward Otto, a Chicago druggist, with substituting a spurious and inferior preparation for "Fairchild's Essence of Pepsine" in several cases where the latter was expressly called for in physicians' prescriptions. The case was hotly contested and hundreds of pages of depositions were taken in New York and Chicago. Judge Kohlsaatz's decree sustains the charges made, perpetually enjoins Otto from ever repeating the offense and taxes him with the costs, amounting to about \$500. This is said to be the first contested case in the United States in which the principle of protection to trade-marks and trade names was extended so as to apply to what is technically known in the drug business as "substitution." Judge Kohlsaatz's decision will probably protect manufacturing chemists, physicians and the general public, all of whom have in the past suffered from these fraudulent practices of a certain class of druggists."

The chief interest of this decision concerning the justice of which—both by written and unwritten law—there can be but one opinion lies in the fact that the remedy for one of the most flagrant and widespread evils is in the hands of those whose *duty* it is to apply it.

The question is now beyond the pale of ethics, the chief elements in which were an apothecary's elastic conscience, an indifferent easy-going physician, an injured patient and a helpless manufacturer; justice for all, redress for the injured and punishment for the offender is what the decision of the Chicago judge entails. There can be no valid objection to the assertion that wilful substitution is what every well-balanced intelligence recognizes as dishonesty and what the law designates, lar-

ceny. Even if the substituted articles were of equal therapeutic value, which they are not, the practice is none the less reprehensible. The manufacturer of a standard ethical proprietary article has, by his labor and brains perfected and by his money invested in creating medical publicity and demand, an article which is distinctively and exclusively his own; to it his rights of property should be as inviolable as they are to the deed of his house or to his clothing.

From this standpoint alone he is entitled to full and unqualified protection by law against unscrupulous druggists who trade on the reputation of any well-established article, or who sell any similar article but the original, when such is specified, and thus derive profits which rightfully belong to the originator. The substitution of inferior articles—and they are 99 times in a hundred vastly inferior—causes a further loss to the manufacturer in reputation. His claims for therapeutic value are based upon the use of the original; the substituted article does not yield the same results and the manufacturer thereby suffers.

The decision of Judge Kohlsaat should stimulate concerted action upon the part of all reputable manufacturers, druggists and physicians. It is, if they but recognize it, the opportune time for which they have been longing for years. It is a legal endorsement of their rights; their duty lies in detecting frauds and punishing offenders. Quite within the realms of probability is the hope that some discerning judge will not only respect the rights of property by granting, as in the Chicago incident, a permanent injunction and inflicting costs on the offender, but will take the further step, justified by the facts of the case, of awarding damages to the complainant and convicting the defendant for larceny.

The indications for treatment were never clearer; they are, in this connection, to invoke the aid of the law.

DIOVIBURNIA IN GYNÆCOLOGIC PRACTICE.

BY J. B. JOHNSON, M.D., ST. LOUIS, MO.

The non-surgical treatment of gynæcologic affections constitutes an important part of the general practitioner's work, and is in a large proportion of cases very satisfactory. Indeed, however desirable minor operations upon the female reproductive organs may be, there are many reasons why it is neither politic nor essential they be resorted to without previous appropriate constitutional treatment. Particularly is this true of the large number of cases which come almost daily to the general

practitioner, in which cases there are symptoms and signs indicative of pronounced disturbances in circulation of the uterus and appendages. There is almost always interference with menstruation; it may be either scanty and painful, or too frequent, excessive, painful and attended with constitutional symptoms that may be so pronounced as to incapacitate the woman for her usual occupation. Of these affections simple idiopathic amenorrhœa, scanty, painful menstruation, endometritis and subinvolution, are most common. Instrumental treatment is in a large proportion of cases objected to by the patient, and there must needs be recourse to treatment by medicines. Indeed, in all these cases, whether operative treatment is practised or not, the patient is greatly benefited by the administration of those remedies which have a selective action upon the sexual organs. This influence is mostly in the direction of relieving congestion and equalizing the circulation in the pelvic organs. The class of remedies most beneficial is that represented by viburnum; the action of these remedies may be reinforced by combinations with certain other uterine tonics, antispasmodics and anodynes. Dioivurnia represents such a combination, and is pharmaceutically well prepared, so that it is well adapted to the majority of cases.

Dioivurnia was given an extensive trial, extending over several months, and the results are herewith appended:

Case I.—Woman, æt. 31. Began to menstruate at 15 years of age; menses had always been painful and attended with formation of clots. Rapid dilatation of the cervix, under ether, had been practised without material benefit. In a few months the menses were excessively painful. Two weeks previous to her period she was placed on dioivurnia, two drachms three times daily, with the result that the flow was free and unattended with pain. Up to this date she has had four periods occurring at normal regular intervals, all of which have been free from pain.

Six other cases, exact duplicates of the previous, were similarly treated with dioivurnia, and the results in each case were identical. Menses which had been previously painful were rendered normal in every particular.

Simple Amenorrhœa.—Three cases of this affection in young anæmic girls were treated with dioivurnia, two drachms three times daily. The menses in all made their appearance within two months of beginning treatment.

Endometritis and Subinvolution.—Five cases, consequent upon labor or abortion, were selected because of their obstinate character. In all, there were excessive bleeding at and between the periods, leucorrhœa, backache and general symptoms of pelvic congestion. Curet-

tage, which was strikingly indicated, was refused by patients. Dioviurnia, two drachms three times daily, was administered. In addition, antiphlogistic and alterative local medication by tampons was practised. Relief of pelvic engorgement was noted in all; menses became much diminished, both in frequency and quantity; leucorrhœa was checked, and there was corresponding improvement in the general condition.

Neuralgic Dysmenorrhœa.—Four cases of this affection, evidently due to disease of the ovaries, were treated by dioviurnia. All of these were subjected to severe neuralgic pain in the region of the ovaries, very much accentuated at the menstrual periods. Sedatives and anodynes which had been necessary previous to beginning treatment by dioviurnia, were abandoned. All of these patients are now in better condition than ever before; pain is less pronounced or entirely absent, and the menses are practically normal.

Dioviurnia seems to possess unusual value in relieving congestion of the pelvic viscera, thus regulating the menstrual flow, and is of marked service as an antispasmodic and sedative in painful affections of the uterus and ovaries.

CORRESPONDENCE.

GLYCERINIZED VACCINE.

Editor AMERICAN GYNÆCOLOGICAL AND OBSTETRICAL JOURNAL—

Sir: In reference to the article concerning alleged failure from the use of glycerinized vaccine lymph, it seems almost impossible to believe that the vaccinations could have been made with a reliable product. The statistics quoted in my article were but a few of the total number compiled, and the percentages of recoveries were in every instance conservative. Indeed, as Dr. C. Hampson Jones Health Commissioner of Baltimore states, the percentage mentioned in my article (95 per cent.) was too low. Dr. William B. Atkinson, Secretary of the American Medical Association, who, as expert selected by the Pennsylvania State Board of Health to investigate the outbreak of small-pox in that State, had exceptional opportunities to determine the real value of glycerinized vaccine, tells me that he has never had a failure from its use. Many, many statements to the same effect and from like authoritative sources are in my possession. In these enlightened days of medical science and its revelations concerning sepsis and asepsis it seem superfluous to plead against the introduction of pathogenic germs beneath the skin; that, in a nut-shell, is the argument against vaccine

points. The only valid objection ever urged against the exclusive use of glycerinized vaccine, *i. e.*, that the glycerine dries slowly, and therefore too much time is consumed in vaccination, may be entirely obviated by the use of a properly prepared vaccine shield, such as is now made by the best-known producer of glycerinized vaccine. This shield is conical in shape and protects the vaccinated area from coming in contact with the clothes. The unanimity of opinion among the physicians of education and experience is that the germ-infected vaccine points—and all points are necessarily, from their process of preparation, germ-infected—should be relegated to the position occupied by other obsolete, unscientific and irrational medical procedures. They endanger life, and it is to be hoped that, in the interests of scientific medicine, every physician will taboo them and induce immunity to smallpox by the only proper agent—glycerinized vaccine lymph.

ALBERT C. BARNES, M.D.

ABSTRACTS.

AN OLD WOMAN AND A FIFTY-POUND OVARIAN TUMOR.

Mrs. N——, Stamford, Conn.; German; age 60; diagnosis, ovarian tumor; admitted to hospital, May 14, 1899; she was highly anæmic, greatly debilitated, and much emaciated, having suffered from this tumor for thirty years. Her physical standard was so lowered that I advised against an operation, fearing the result would be fatal. She however, realizing that it was the only chance she had, and being a great sufferer in her present condition, insisted on the operation. I, therefore, consented to perform it after I had gotten her in somewhat better condition. She was put to bed, bowels regulated, and an absolute bovine diet prescribed, a tablespoonful every two hours, in milk. She began to improve and got so much better in her general physical condition that on May 28th I set the time of operation for the 29th. On that day, assisted by two of my colleagues, the operation being witnessed by eight others, I performed the operation in the following manner: The tumor being so large, it was first aspirated; nineteen quarts of fluid being drawn off; the incision was made in the linea albi, extending from the umbilicus to the pubes. The peritonæum was stitched to the edges of the wound, and dissection of the tumor with the hand was begun. It was found to be attached to the stomach, liver, pancreas, transverse colon, uterus, and the abdominal walls. It took three-quarters of an hour of careful dissection with fingers, to detach it. It

had developed from the right broad ligament, involving right ovary and tube, which was removed in mass with the tumor, great care being necessary not to include the ureter. The cavity was now flushed out with warm salt solution and bovine—one fifth bovine and four-fifths salt solution. The peritonæum was closed with a continuous catgut suture, likewise the muscular layer; and finally, the skin and fasciæ with interrupted silk sutures. The wound was then dressed with bovine pure, over which dressing a maternity binder was applied. The patient's pulse being weak, she was given a high rectal injection of bovine pure, and put to bed. Her reaction from shock of operation was remarkable in twenty-four hours; she was conscious and free from pain. Bovine was administered now every hour, a teaspoonful of milk alternating with old port wine. The wound was dressed once in twenty-four hours. June 9th, the stitches were removed, the wound having entirely healed. The bovine was now increased to a wineglassful in milk every three hours. June 22d, the patient was sitting up and feeling splendid. June 29th, patient was discharged cured.

This tumor including fluid weighed a fraction over forty-seven pounds, there having been only five larger ones removed successfully, to my knowledge.

Taking into consideration the patient's age, her physical condition, and the size and attachments of the tumor, this case is certainly most remarkable, and I attribute my success largely to the use of bovine.—T. J. Biggs, M.D., in *Sound View Hospital Reports*, July, 1899.

DRESSING OF BURNS.

Baer (Report, Philadelphia Eye, Ear, Nose, and Throat Dispensary) records a severe burn in a child six years old, with results of treatment. The wound was caused by matches with which the clothes were set on fire. The injury extended from the ninth rib on the left side to the axilla and thence to the elbow. The pain was most excruciating, and was relieved only by sustained treatment with opiates. Locally, carron oil, cold cream, and unguentine were employed at different times, the former two being laid aside for the latter. The oil was objectionable because it stuck to the wound and made a dressing painful to wear, and especially so to remove. The consulting physicians agreed that extensive scarring would result no matter what dressing was employed, and ordered cold cream. This was displaced by unguentine, which made

the most satisfactory dressing in every particular. The result of treatment was rapid and uncomplicated; cicatrization and complete recovery rapidly followed, leaving not a vestige of scar-tissue or contraction.—*Medical News*, July 29, 1899.

A BACTERIOLOGICAL TRAGEDY.

A gay Bacillus, to gain him glory,
Once gave a ball in a laboratory.
The fête took place on a cover glass,
Where vulgar germs could not harass.
None but the cultured were invited,
(For microbe cliques are well united),
And tightly closed the ball-room doors,
To all the germs containing spores.
The Staphylococci first arrived—
To stand in groups they all contrived—
The Streptococci took great pains
To seat themselves in graceful chains.
While somewhat late, and two by two,
The Diplococci came in view.
The Pneumococci stern and haughty
Declared the Gonococci naughty,
And would not care to stay at all,
If they were present at the ball.
The ball began, the mirth ran high,
With not one thought of danger nigh.
Each germ enjoyed himself that night,
With never a fear of the Phagocyte.
'Twas getting late (and some were "loaded"),
When a jar of formalin exploded,
And drenched the happy dancing mass
Who swarmed the fatal cover glass.

* * * * *

Not one survived, but perished all
At this Bacteriologic ball.

—J. LEE HAGADORN, M.D., Los Angeles, in *Southern California Practitioner*.

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JULY, 1899.

THE ÆTIOLOGY OF ECLAMPSIA AND THE DIAGNOSIS OF
IMPENDING ECLAMPSIA.*

BY EDWARD P. DAVIS, A.M., M.D.,

Professor of Obstetrics in the Jefferson Medical College, etc.

Lack of time and space forbids an extensive review of the many researches upon this subject. It is well, however, to revert to some of the older theories to indicate their failure to explain the condition and to point out advances in modern pathology of great interest and value.

The Traube-Rosenstein theory assigned to hypertrophy of the left ventricle, increased tension in the aorta and hydræmia, œdema of the brain, and anæmia of the brain, a casual relationship to eclampsia. Unfortunately, for this theory, it has long since failed in the test of repeated autopsies. Œdema and anæmia of the brain are so inconstant and arise from such different causes that their value is of limited extent in explaining so constant a condition as that of eclamptic convulsions.

The theory of intoxication and the mechanical origin of the kidney of pregnancy have also received much attention. The effort to positively identify eclampsia with uræmia has failed, for many uræmics die without eclampsia and many eclamptics do not present the pathological signs of uræmia. Frerich's studies and those of Halbertsma have drawn attention to the mechanical element in compression of the ureters by the growing womb. Such a procedure may cause hydronephrosis, but this is not found in patients dying of eclampsia. Patients suffering from fibroid tumors of the uterus making pressure upon the ureters, if this theory were correct, should have eclampsia, but such is not the case. That the kidney of pregnancy is an engorged and over-taxed organ is often true, but that there is in pregnancy a mechanical cause sufficient to account for eclampsia is not proven.

* Read by invitation before the Philadelphia Obstetrical Society, May 4, 1899.

The advent of bacteriology naturally turned attention to germs as a possible cause for eclampsia. Delore, Doléris, Gerdes, Blanc, Favre, and others have isolated bacteria supposed to produce eclamptic convulsions. Bar's¹ criticism upon the possibility of the microbial origin of eclampsia seems reasonable. Bacteria are found not only in the urine of eclamptic patients, but in that of many pregnant patients who are well. The injection of such urine into animals produces little result. When the blood of eclamptic patients is examined the staphylococcus and pneumococcus are occasionally found. It is known that these germs, with the colon bacillus, frequently cause lesions of the liver and kidney, but there is no positive proof that any one germ causes eclampsia.

Mention must be given to Riviere's theory which finds in anatomical changes in the liver, skin, lungs, intestines, and kidneys following pregnancy, sufficient cause for eclampsia. Unfortunately, Riviere has mistaken the importance of the lesions present in eclampsia and has exaggerated them as causes when they are but effects and accompaniments.

At the present time, the bulk of evidence is distinctly in favor of the belief that a profound toxæmia originating in the bodies of mother and foetus causes eclampsia. The exact agent has not been isolated. The interesting experiments of Merletti² show that ammonium carbonate in solution causes eclampsia and death in animals, whose organs displayed the lesions often found in eclampsia. These lesions were granulation degeneration of the cell protoplasm of the liver, with alterations in the cells surrounding the central vein, granulation of the epithelium of the convoluted tubules of the kidneys and hæmorrhages in the placenta.

In short, cellular necrosis was the chief characteristic. Merletti's studies led him to declare a profound intoxication by the excess of incomplete urea in the blood causes convulsions and death with parenchymatous degenerative changes, with or without hæmorrhages.

Bouffe de Saint-Blaise³ calls attention to the importance of the liver in the formation of these poisons. Accidents occur only when the liver and kidneys fail to eliminate. In mentioning recent researches, Feltz and Ritter,⁴ Bouchard,⁵ Blanc,⁶ Laulame,⁷ Tarnier,⁸ Chambrelent,⁹ Demoret,¹⁰ Gorla,¹¹ Ludwig and Savor,¹² and Volhard¹³ must not be omitted. Each has contributed important evidence along the same line, and we are especially indebted to the classic paper of Bouchard upon the subject.

In addition to these, Dührssen,¹⁴ Rummo,¹⁵ Saft,¹⁶ Fischer,¹⁷ Herman,¹⁸ Schmorl,¹⁹ Massin,²⁰ Löhlein,²¹ and Krönig²² have all contributed

testimony of value. Among American experimenters, Stewart²³ in recent papers has reviewed some of this experimental work, and added a striking demonstration of the truth of this thesis.

For positive evidence in favor of the toxæmic theory, we should naturally look to the blood and to the urine of the eclamptic patient. Experimenters were misled for some time by the fact that during eclampsia, the urine injected into animals is but feebly if at all toxic, while on the contrary the urine of healthy individuals is often highly toxic to animals. When, however, the blood serum of eclamptics was carefully studied and a microscopic study of the organs of eclamptic patients showed, as demonstrated by Winkler,²⁴ multiple emboli as a constant pathological change, it became evident that the toxins of eclampsia cause convulsions, *because they are absent from the urine and excretions and present in the serum of the blood and in the organs of the body.* It is natural then to find the urine during eclampsia not highly toxic, for if the urine were toxic, the patient would not be intoxicated with poisons. This fact is of great importance in diagnosing threatened eclampsia.

And this leads naturally to the diagnosis of the toxæmic condition and of impending eclampsia. It is difficult to examine experimentally the blood serum of each patient coming under our care, but the study of the urine in pregnancy has long been a subject of discussion. If we accept the evidence in favor of toxæmia and recall the abundant proof that the presence of serum albumen in moderate amount in the urine is not an indication of toxæmia, we shall then appreciate the importance of a moderate amount of serum albumen as a diagnostic factor. Briefly, serum albumen in the urine is a frequent symptom of normal pregnancy. It is only when this amount becomes excessive and it is accompanied with kidney débris, showing progressive nephritis, that it is a symptom of moment.

In the present state of clinical medicine we lack convenient tests for toxins. We have, however, in urea a body which serves as a clinical index to the metabolism of the body, and which at present may be utilized to appreciate the perfection or the lack of assimilation. In my former papers upon this subject,²⁵ I drew attention to the value of urea as a clinical index, and experience leads me to reiterate my former statements upon this point. It must be understood that urea is not a poison, that it represents the finished product of metabolism, and that as Merletti has well stated, it is incomplete urea in the blood in the form of toxins which causes eclampsia. The diminution in the amount of urea excreted indicates that toxins are retained, while a normal amount of

urea indicates that but little toxine is retained. A full amount of urea shows that metabolism is normal and that no appreciable amount of toxine fails of elimination. Clinical experience continues so strikingly to demonstrate the value of this point, that I need not detain you with the recital of cases. The pregnant woman rarely excretes a normal amount of urea, but less than 1.5 per cent. demands attention on the part of the physician. While my own preference in making this test is for Squibb's apparatus and method, others of practical value are at the service of the profession.

Attention should be called to the specific gravity of the urine and clinical computation of the solids excreted by the simple problem of multiplying the last two figures of the specific gravity by 2.33. The quantity of the urine if possible should be measured, and in critical cases, this must be insisted upon. The presence of sediment calls for microscopic examination.

While the resources of clinical medicine may be fully exhausted in the most thorough examination possible of this important secretion, attention must also be directed in the diagnosis of impending eclampsia to the functions of the liver. Jaundice is an especially grave symptom and, hæmatogenic in origin in these cases, points to a grave toxæmia. Indications of habitual deficient action of the liver are important data for the physician.

The skin, the intestine, and the lungs, must receive full attention to ascertain the part they are playing in elimination. All pregnant patients should be considered constipated until proven otherwise by autopsy or until the bowels have been thoroughly emptied by a competent nurse. Purgatives containing mercurials serve the double purpose of acting upon the liver and sweeping from the intestine the colon bacillus which may prove an active agent in producing serious visceral lesions. In examining pregnant patients to determine the presence of constipation, the physician should palpate the abdomen, and attention is called to tympanites of the transverse and ascending bowel as indicating the presence of fæces and bacteria in the intestine. When this tympanites is persistent and obstinate, it demands thorough treatment for its relief.

As the nervous system is habitually the most important medium of communication between the physician and his patient, so in the diagnosis of toxæmia the prominent subjective symptoms are those pertaining to the nervous system. As has been well shown by Hughes, Carter, and many others, toxæmia affects this portion of the body most powerfully. Neuralgia, indigestion, pyalism, pruritus, pernicious nausea, insomnia, eruptions upon the skin, excessive sweating have

all been traced to this source. The familiar frontal headache of toxæmia, the disturbed vision and the hebetude of mind have long been classic symptoms of danger. It must be remembered, however, that before these are present melancholia, insomnia, disordered appetite, and morbid dread demand an explanation at the hands of the physician. Those who have had experience with the fulminant cases of toxæmia and have seen a patient become suddenly maniacal, only to die in convulsions in a few hours, can appreciate the virulence and effect of toxins upon the brain.

If in medicine we try to be forewarned that we may be forearmed, the obstetrician must not forget that he is physician and surgeon, and must thoroughly ascertain the previous medical history of his pregnant patient. The gouty person, the patient having a history of repeated passage of gall-stones, the chronically constipated patient, and those in whom comparative advance of age causes the process of elimination to be sluggish, should warn the obstetrician that pregnancy brings to them especial dangers. Oliva²⁰ had an extraordinary experience in losing a patient by eclampsia who had but one actively functioning kidney, and we experienced the same disappointment when a patient passed through her labor and rallied from eclampsia, only to perish because she, too, had but one active kidney, the other having been destroyed by a previous nephritis. While we cannot prevent the marriage of women whose habitual health is deficient, still by appreciating abnormal conditions present, we may obtain distinct warning against danger during pregnancy.

To summarize, the great majority of evidence assigns toxæmia as the cause of eclampsia. The diagnosis of toxæmia is made by studying the action of the excretory organs of the patient. As regards the examination of the urine, the quantity, its specific gravity, the amount of urea, the presence and character of sediment are important. Especial attention must be directed to the functions of the liver and intestine. When close scrutiny indicates that the liver, kidneys, skin, bowels, and lungs are deficient in action, investigation of the nervous system will show that the patient is suffering from retained toxins. Should this condition be unrelieved, the weakest excretory organ will first give way, and the acute nephritis or hepatitis of acute toxæmia of the blood will usher in eclampsia.

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THE PREVENTIVE TREATMENT OF PUERPERAL ECLAMPSIA.*

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The rational and efficacious treatment of eclampsia consists in prophylaxis. One who has opportunity by skillful treatment to avoid the occurrence of convulsions forcibly realizes the truth of that statement when confronted by a patient already seized with convulsions, whose life is seriously jeopardized.

It is impossible to discuss the prophylactic treatment of eclampsia without formulating a theory of the causation of that disease.

Dr. Davis has ably discussed that side of the question and has pointed out that recent investigations, while not clearly demonstrating the actual cause, all indicate that toxins of unknown composition and of various origins are the underlying factors of puerperal eclampsia.

The healthy organism at best is a manufactory in which poisons of various kinds are constantly produced, and as Boufe has happily remarked "even the healthy body makes incessant attempts at suicide by intoxication."

There are, however, two sets of organs whose business it is to frustrate these attempts, organs of transformation or arrest and organs of elimination. By the action of these protectors health is maintained.

During pregnancy there are physiological changes which place these protecting organs at a disadvantage and render quite possible a break in the physiological equilibrium that should be maintained by the organs that transform and eliminate dangerous poisons. Thus during pregnancy the blood contains an abnormal quantity of leucomaines, the toxicity of the urine is decreased while that of the serum is increased. There are fewer red blood-corpuscles in the blood, the heart does extra work, as do the lungs, and an unusual strain is thrown upon the kidneys and the liver.

In the discussion of eclampsia too much stress cannot be laid upon what may be called liver insufficiency and I think it is important to attract special attention to the fact that a number of complications of pregnancy depend directly upon faulty action of the liver, the kidneys having a secondary though important rôle in their production. The

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commonest symptom is vomiting, which, with dyspepsia and constipation, shows a preliminary slight intoxication.

Ptyalism, pruritis, and incorrigible vomiting lasting after the fourth month are more serious manifestations of the toxæmia.

Insomnia, icterus, and acute yellow atrophy complete the sequence in those cases in which the liver trouble is most marked. Sometimes the nervous system may be the one affected, all portions of it being liable to attack, from the peripheral nerves to the cortex, as in peripheral neuritis, mania, and melancholia of pregnancy. The skin may suffer as in herpes and bronzing. Albuminuria is of frequent occurrence, apart from renal disease.

Thus it will be seen that the preventive treatment of eclampsia demands a critical study of the patient and the prophylaxis will be hygienic as well as medical and obstetrical.

For the first we must secure good pulmonary ventilation and a diet of easily digested, readily oxidized, non-constipating and non-toxic of easily digested, readily oxidized, non-constipating and non-toxic food. The hygienic principles embracing moderate out-door exercise, the avoidance of compression of the waist by the corset, frequent bathing, and the selection of proper underwear and the avoidance of taking cold are hygienic rules demanding the closest attention from pregnant women.

How shall we recognize the earliest departure from a physiological pregnancy and how shall we detect the earliest signs of approaching danger?

The common subjective phenomena of pregnancy first call attention to the condition; neuralgia, irritable temper, vomiting, salivation, and hebetude all indicate slight intoxication. The urine is generally quite free from albumen at this early stage, but the urea is decreased, while the uric acid is increased in quantity, and extractives make their appearance; glycosuria is a certain sign of hepatic deficiency; indican and peptones may also appear in the urine. The examination of the urine of pregnant women to determine the presence of albumen alone, in the light of modern investigation is not sufficient to properly and scientifically estimate the approach of dangerous symptoms. For practical purposes the percentage of urea, the specific gravity and the amount voided must be determined and even these only serve as a clinical index of the amount of waste products successfully excreted. A further study of the constitutional signs of toxæmia must be made in order to determine how active our prophylactic treatment should be. This brings us to the question of the medicinal prophylactic treatment of

eclampsia and we should here remember that the liver is the most important organ of defense, and after it the kidney, the bowel, and the skin.

As we meet these cases in practice, all grades of toxæmia are encountered, which means that the activity of our prophylactic treatment must vary. Another fact of importance is the acute or chronic nature of the toxæmia. A sudden diminution in the waste products with the appearance of alarming constitutional symptoms is often more favorable because more amenable to treatment than a slowly appearing and gradually increasing toxæmia. When the specific gravity of the urine is low, the quantity voided steadily diminishing, the percentage of urea persistently decreasing with or without the presence of albumen, the case is really alarming and indicates a chronic process which may lead to the gravest dangers.

The indications for treatment will be made plain by a critical study of individual cases. Where the urinary analysis and the constitutional signs of toxæmia point to a slight deviation from the normal, it will be sufficient to modify the diet, eliminating nitrogenous foods, and directing an abundance of milk and water. The advantage of calomel as a laxative for pregnant women is very great, since it is probably the best intestinal antiseptic, besides acting upon the liver, the organ that especially requires attention during pregnancy. For graver cases showing marked toxæmia, with the percentage of urea diminished below one per cent., the specific gravity below 1010; and the quantity of urine reduced to 800 or 1000 grams, the most active treatment is demanded. This should include rest in bed, the patient occupying the genupectoral position at intervals, compatible with her comfort. An exclusive milk diet until marked improvement occurs is essential. The free use of normal salt solution I have found of greatest advantage. The patient should be placed in the Trendelenburg posture and the colon daily flushed with at least two gallons of salt solution. In very urgent cases hypodermoclysis may be desirable. A hot-air bath or the hot pack should be reserved for cases so alarming as to require the termination of pregnancy.

Of all drugs available for the rapid elimination of waste material I have learned to place most confidence in Epsom or Rochelle salts.

It will be noticed that I have made no mention of the use of drugs which, for their diuretic effect, are frequently employed with great confidence. Digitalis, diuretin, benzoic acid, and similar drugs I have used in the past, but it is my conviction that the more rational plan is to rely upon mechanical diuretics, such as an abundance of pure drinking water

and rectal injections of salt solution, and upon elimination by the skin and bowels and thus to save as much as possible the kidneys, whose functional activity has been overtaxed by Nature's efforts at elimination. There exists considerable difference of opinion as to the necessity for terminating pregnancy in cases of threatening toxæmia, and it requires good judgment and a large experience with these cases to decide in individual cases the safe course of action. Analysis of the urine cannot always guide us, nor will a careful study of the constitutional signs of toxæmia always determine the question. My records of cases of toxæmia of pregnancy in a series of 1200 patients at the Preston Retreat exhibit great contrasts between the degrees of kidney insufficiency as shown by urinalysis, and the degrees of toxæmia as manifested by constitutional signs. In other words, the question of terminating pregnancy cannot always be decided by an examination of the urine. If any single fact, more than another, can be our guide, it is that the toxæmia has developed steadily and slowly and that the constitutional signs and urinalyses keep pace with each other in giving evidence of the accumulation of toxins. Of a large number of cases that are examples of that observation the two following cases are presented as types.

Case No. 4102.—Mrs. C., æt. 24, ii gravida. Admitted to hospital with blurred vision, headache, nausea and vomiting, twitching of the facial muscles, and œdema of the legs and vulva. The urine was free from albumin and casts; specific gravity 1017; quantity in 24 hours 18 ounces; urea 1 per cent. Her history indicated a very sudden onset of her alarming symptoms. Under appropriate medical treatment the signs of toxæmia disappeared in five days and the urine was normal.

The urine of this case was not indicative of serious trouble, while the general signs of toxæmia were marked. I have observed less frequently the opposite conditions, *i. e.*, the urinary signs very alarming, with no general symptoms of toxæmia.

Case 3683.—Mrs. N., æt. 34; viii gravida. Referred by Dr. Brous. The patient's history indicated a progressive toxæmia throughout a period of three months. Her face, legs, and vulva were very œdematous. She had been passing a very small quantity of water, which she stated stained her underclothing red. Immediately after admission she was catheterized and only an ounce of urine was obtained which contained four-fifths albumen by bulk and a microscopical examination found a large amount of blood, hyaline, and blood casts. The specific gravity was 1016, and the proportion of urea .5 per cent. The patient had nausea, vomiting, occipital headache, and loss of vision in the

right eye. Prompt treatment to eliminate the poisons while pregnancy was being terminated brought this patient safely out of her alarming condition. It would be folly to temporize with such a case. The termination of pregnancy is the only safe course to follow.

A practical rule, and one which I invariably follow, is to study the patient's general condition systematically to determine where the toxæmia is most apparent, whether the brunt of its ill effects is borne by the central or peripheral nervous system, the circulation, the gastro-intestinal, the hepatic, or urinary functions. Critical examinations of the urine repeatedly should be made. Hygienic and medicinal treatment must be faithfully followed. After observing the progress of the case over a period of a week or two, if the patient's condition steadily improves the prophylactic measures employed may be continued. If, however, the patient's condition steadily gets worse, or after showing improvement manifests at intervals sudden relapses the only safe course is to terminate the pregnancy.

Recent investigations to determine the origin and the characteristics of the poison that causes eclampsia are exceedingly interesting, and the prophesy has been made that the future will disclose the identity of the toxin and thus raise the prophylactic treatment of eclampsia to a scientific level, by the employment of injections of an appropriate antitoxin.

THE USE OF PAROTID GLAND EXTRACT IN THE TREATMENT OF OVARIAN DISEASE.*

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Dr. John B. Shober of Philadelphia was the first in this country, as far as I have been able to learn, to call the attention of the profession to the use of parotid and mammary gland extract in the treatment of diseases of the ovary and of fibromata of the uterus. He states in a paper, entitled "The Use of Mammary Gland in the Treatment of Fibroids of the Uterus and of Parotid Gland for Ovarian Disease" that his attention was called to the value of the gland preparation by a paper which was presented by Dr. Robert Bell of Glasgow.

Dr. Shober says: "The results reported in this communication were so remarkable that, were it not for the high standing of the writer in the profession, and his well-known conservatism, one would be inclined to discredit the statements made, and suspect that they were based on inaccurate diagnoses and careless clinical observations. The subject of the paper was entirely new to the profession, and while it was received seriously, it nevertheless provoked only limited discussion." Upon thyroid extract, which had previously been brought into notice by Jouin, the entire interest of the profession seemed to be centered and it was experimented with in cases of myxœdema, obesity, fibroids of the uterus and the neurosis following the artificial climacteric, with such enthusiasm, that the much more striking results obtained, together with the far greater range of therapeutic possibilities, shown by the parotid and mammary gland extracts in the treatment of uterine and ovarian diseases seem to have been entirely overlooked.

I shall not attempt to discuss the physiological actions of these glandular extracts at this time—their use must be as yet empirical, except in so far as that mysterious unknown influence, which these ductless glands exert upon one another, the so-called sympathetic relation, may be looked upon as an *indication*—to which I shall again allude. For a clearer understanding of the subject to those who have not read the original papers referred to by Drs. Bell and Shober, I shall quote liberally from them.

Dr. Bell's theory was, in speaking of the use of thyroid extract in

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the treatment of carcinoma uteri, that when local disease commences in an individual, the organ which it takes possession of must have departed from a healthy condition prior to this and that the weakened condition of the organ affected may have been influenced by a morbid or functionally altered state of an organ in close physiological relationship. The healthy action of skin, the mucous membrane, and the adjacent connective tissue appear to be dependent upon a peculiar action of the thyroid gland, as shown by recent studies in myxœdema and in psoriasis. Therefore, why may not epithelioma of the cervix uteri, which arises in the epithelial layer of the mucous membrane, be due to the absence of some obscure catalytic influence of this gland? It has also been observed that disease of the thyroid gland is often accompanied by an excessive metorrhagia showing that the function of this gland exerts some potent influence upon the lining membrane of the uterine canal. Epithelioma does not attack a previously normal cervix uteri but, if there be present any lesion such as laceration or hypertrophy due to long-standing endometritis or endocervitis, then this unhealthy state acts as a predisposing cause to the development, not only of epithelioma but to affections of less virulent type.

The close physiological sympathy existing between the mammæ and the uterus suggested the use of mammary gland extract in fibroid tumors of the uterus, whilst the physiological relation shown between the parotid gland and the ovaries as seen by the frequent metastasis (mumps) between the two, led to the use of parotid gland extract in ovarian disease.

Dr. Bell reported three cases of epithelioma of the cervix treated with thyroid extract in which the local disease entirely disappeared in two cases, with the third still under treatment but remarkably improved. Two cases of fibroid of the uterus were treated with mammary extract with most astonishing results—the tumors rapidly diminishing in size, all symptoms relieved and general health much improved. The results from the use of parotid extract in a few cases of ovarian disease was equally remarkable and satisfactory.

Dr. Shober reports four (4) cases of fibroids of the uterus treated with mammary extract in which careful histories and measurements were taken and the results carefully and accurately recorded. In a course of treatment extending from three to six months the tumors in each case were markedly diminished in size with alleviation of symptoms and general improvement in health.

Upon four cases of ovarian disease treated with parotid gland the results were equally remarkable and gratifying. The symptoms they

complained of were irregularity of the menses, severe pain before and during menstruation, leucorrhœal discharge and pain in one or both ovarian regions and back. The local examination in the cases revealed an enlargement of one or both appendages with varying degrees of sensitiveness and prolapse of the ovary into the cul-de-sac or a condition of salpingo-öophoritis in either the acute, subacute, or chronic stage. In addition to the routine treatment of ichthyol tampons, iodine, and hot douches these patients were put on parotid gland extract (gr. $2\frac{1}{2}$ in capsule) three times a day. In from two to four months during which time they were under this treatment not only were all of the symptoms for which they had applied for treatment relieved but local examination from time to time showed marked anatomical changes; in some the enlarged and tender appendages becoming absolutely normal to touch while in others they were reduced very materially both in size and sensitiveness.

In summarizing Dr. Shober says: "The results obtained with the parotid gland in ovarian disease, while striking, are not convincing. Equally gratifying results are often obtained by local treatment alone and by other well-recognized methods." In this I cannot agree with him, for my experience with this new therapeutic agent is not only equally striking, but most decidedly convincing. To state it very modestly, I feel that the results obtained by me in the usual or routine local treatment, as practised previous to the introduction of this new agent, were at least as good as those obtained by most men. In fact, I was beginning to feel that they were so good as to justify me in calling the attention of the profession to certain points of detail that I have never seen stated—that is, to the manner of using ichthyol and massage in cases of plastic exudates in the pelvis. I have been using this drug combined with glycerine on tampons to soften and absorb exudates in the pelvis since it was first called to my attention about eight years ago but, as its value is now well recognized, I will not dwell upon it. The particular point to which I wish to call attention is, the value of its internal administration in cases of retroverted and adherent uteri. I have found that ichthyol in pills or capsules of five (5) grains t.i.d., together with a rectal irrigation of hot-saline solution, followed by a rectal suppository of the same substance in conjunction, of course, with the abdomino-pelvic massage and tampon treatment, very materially hastens the absorption of the exudates and adds greatly to the comfort of the patient.

In the cases I shall cite, the parotid gland has for the most part been used in conjunction with my usual treatment as suggested above, varied

of course by the nature and extent of the disease. The fact that the glandular extract was given in conjunction with local treatment does not to my mind in the least detract from its value, for the reason that with my increasing experience in this class of cases, I have come more accurately to recognize the possibilities and limitations, in my hands at least, of local treatment, so that any additional influence for good is readily recognized and appreciated. In my opinion, after quite an extensive dispensary and hospital experience together with a fair amount of active operative work both in hospital and private practice, the derangements of the female, particularly that large class which can be grouped under the general term of salpingo-oöphoritis, are most intractable to treatment, recur very frequently and are by far the greatest influence in producing that condition of chronic invalidism of greater or less degree so frequently met with in this twentieth-century civilization.

The class of cases to which I have applied this treatment has been both numerous and varied and, while the time under treatment with this remedy has not been very long in some instances, still such very satisfactory symptomatic results have been obtained in every case, together with decided anatomical changes in many of them, that I feel warranted in hastening to add my testimony to that of Dr. Shoher in the hope that a more extended and careful study of this product may be instituted; but at the same time I wish to state most emphatically that in these glandular extracts I do not claim to have found the long-looked-for panacea for all the frailties of feminine flesh, so to speak, but only desire to call the attention of the profession to a comparatively new, and as yet unrecognized agent in the treatment of these cases. Another point I also wish to be clearly understood before citing these cases, is that I consider myself to be in a measure familiar with those utterly hopeless conditions of pus in the pelvis which can only be treated by radical operation, and that the glandular extracts are not advocated for such cases, but rather for that large and constantly increasing class now included under the broad term of salpingo-oöphoritis covering a multitude of clinical and pathological inaccuracies or what might be termed unproved assertions.

The preparation used has been that prepared by the Phosphoalbumen Co., of Chicago—glandulæ parotidæ in three-grain capsules. The preparation seems of uniform strength and reliability from the fact that my results have been practically the same in all the cases upon whom I have tried it and with absolutely no untoward symptoms in any case.

Case I.—Laura C., 19 years; married 3 years; nullipara; miscarried 0; menstruation, irregular, 2-4 weekly type; duration, 10 to 12 days; amount free, very severe pain before and during flow. Always has to go to bed from one to three days and feels very bad all through menstruation. Last menstruation November 5th. Complaints of pain in both ovarian regions, particularly left, slight leucorrhœal discharge. Examination: Uterus forward, slightly antiflexed. Left side—Ovary enlarged and displaced downward into left lateral fornix, very sensitive to touch. Right side—Ovary also enlarged, but no downward displacement, nor so sensitive as left. November 14th—put on parotid gland, gr. .iii. t.i.d. together with routine treatment of ichthyol tampons and hot douches as before. November 23d—Patient says she felt better two days after taking capsules. Examination of ovaries, not so tender to the touch, although she expects menstruation to-morrow. December 4th—Menstruation came on November 25th, lasting only 5 to 6 days—almost without pain, never before with so little pain. December 16th—No capsule for a week—not feeling so well; renewed capsules. December 20th—Feels much better; marked change on taking capsules again; pain disappeared. January 3d—Menstruation delayed; should have come on December 25th, but patient feels very well. January 6th—No menstruation; feeling well. Examination: Ovary distinctly smaller and decidedly less tender. January 20th—Feeling well. No pain in side; morning nausea; breast enlarged. Examination: Uterus enlarged; left ovary still slightly enlarged but not at all sensitive. Right ovary apparently normal—pregnancy. April 10—Pregnancy advancing in a normal and satisfactory manner.

Case II.—Mrs. P. First seen 1 year ago. 30 years; primipara, 6 years ago; miscarriage 1 to 7 years ago; menstruation, regular 4-weekly type, 4 to 5 days, scanty in amount; severe pain before and during flow. Complained of pains in back and both inguinal regions. Leucorrhœal discharge. Had suffered since birth of child, but more acutely within last year; was also getting very nervous. On examination I found uterus large, retroflexed and adherent. Left ovary enlarged, prolapsed and very tender. Right ovary also enlarged and tender but not so much so as left. After local treatment with ichthyol tampons, and massage, the uterus became more movable and dilatation and curettage were advised and accepted. Under ether the remaining adhesions were easily broken up and the uterus raised. Cervix dilated and uterus curetted. Tampon put in cul-de-sac to maintain position. I will not go into details as to subsequent history except to say that although the uterus was now fully movable the ovaries were still enlarged and tender,

so that a pessary to maintain the uterus in position could not be endured. While the curetting had been of service, she still complained of the pain in the sides as before, and was somewhat discouraged when I began the use of the parotid gland extract on October 1, 1898. On December 6th she said that she had taken thirty-six capsules and had absolutely no pain. She said the improvement was noticable from the second day. Examination: The uterus was retroverted but could easily be put into position again. The right ovary could hardly be called larger than normal and was insensitive to pressure. The left ovary was still slightly enlarged but only sensitive to fairly deep pressure. Condition, March 10th: Upon being very carefully questioned as to symptoms, etc., she is positively better than she has been at any time since the birth of her child, seven years ago. She says it may be a coincidence, but is positive that the marked improvement commenced after taking the capsules. Examination: Shows uterus retroverted and apparently enlarged, and as she has not been unwell for two months and has some signs of pregnancy I did not care to palpate it very forcibly. Right ovary normal. Left ovary seemed larger than normal, but not at all sensitive.

Case III.—F. P., aged 25; married, 5 years; nullipara; miscarried, 1; menstruation regular, 4-weekly, lasting 3 to 4 days; amount, small; severe pains preceding and during flow. Complains of pain in both ovarian regions, particularly the right. Two years ago had an attack of peritonitis and was in bed for two months. Examination: showed uterus forward in good position. Right ovary enlarged and tender, displaced downward but not in cul-de-sac. Left ovary also enlarged and tender, but not so marked as right. This patient was treated from July, 1897, to October, 1898, with more or less regularity, being relieved if under continuous treatment but never entirely free from pain and soon relapsing when treatment was discontinued. October 3d—Put on parotid extract gr. t.i.d. October 19th—Patient feeling better. On examination both ovaries less sensitive to touch and are somewhat smaller. November 4th—Menstruation came on October 23d, without pain either preceding and during flow as heretofore. Examination: Ovaries distinctly smaller and less sensitive to touch. Continued treatment. January 5th—Patient came to report condition—considered herself cured and stopped treatment. Examination: Both ovaries can be easily palpated, being in itself possibly a sign of slight enlargement, but otherwise perfectly normal.

Case IV.—M. S.; age 23; married 2 years; nullipara; miscarried, 1; menstruation, regular 4-weekly, 3 to 6 days; amount, moderate; very

severe pain before and during flow. She complained of pains in both ovarian regions, particularly right, also back; slight leucorrhœal discharge, frequent micturition; constipation. Previous history: About one month after marriage the dysmenorrhœa and pains in side and back became very severe. Menstruation became irregular, 6 to 8 days, with so much pain that she had to stay in bed two and three days at each period. She was dilated and curetted shortly afterward with some relief. At the time I saw her, examination showed uterus antiflexed and drawn toward right side and finally fixed. Exudate in right broad ligament, mass of tube and ovary felt tender and enlarged. Utero-sacral ligaments tense and contracted, left ovary felt enlarged, tender and displaced downward; some exudate and thickening in broad ligament. Abdominal operation advised, but declined. After three-months' treatment of ichthyol tampons and massage the local conditions were somewhat improved and menstruation not so painful as formerly, but still complained of considerable pain, particularly in right side and back. November 20th—Was put on parotid gland extract. December 12th—Menstruation, while painful, was somewhat better than the last. January 3d—She was feeling very well. Capsules gave out, and noticed that she had more pain in side and back when not taking them. Examination: Left side very much improved—exudate less and tenderness gone. Right side was still tender, but smaller, uterus more movable—exudate in broad and utero-sacral ligaments softer. February 15th—Menstruation came on February 8th, or twenty-seven days from last—some pain, but not nearly as much as formerly. Since that time has been feeling very well, better than for a long time, up to one week ago, when the capsules again gave out—soon noticed difference in back and side when not taking them. Examination: Uterus still antiflexed. Left side much improved. Right side not so tender, still, some exudate in broad and utero-sacral ligaments, but uterus more movable—still under treatment.

Case V.—M. D., age 32; married, 17 years; nullipara; miscarried, 0; menstruation, irregular, 2-4 weekly, lasting 48 days, amount free, very severe pain before and during flow, last menstruation lasted eight days with great pain. Complains of constant pain in left ovarian region and back, slight leucorrhœa, dysuria just before menstruation, also complains of headaches, cannot bear slightest pressure about waist, causes nausea. Cannot ride in cars on account of nausea produced by jolting motion. I first saw this patient three years ago and treated her by ichthyol tampons and massage for about four months for similar symptoms. I advised operation at that time, which was declined. She was

somewhat relieved and disappeared until three months ago. I remembered her local condition, which was unusual, and upon which I had been able to make no appreciable impression anatomically at that time. It was practically the same when I saw her three months ago, and she was as follows: Uterus enlarged and retroflexed in the 2°, that is, the fundus not being low down in the cul-de-sac, but rather in the axis of the vagina drawn to left side and absolutely immovable. The entire left lateral fornix was filled with a solid exudate, making the side of the uterus and pelvis seem like one solid mass, no ovary could be made out. Right side, by very deep pressure and abdominal counterpressure appendage could be made out with difficulty. November 14th—Parotid gland, gr. iii. t.i.d., with local treatment and massage twice weekly. November 27th—Menstruation came on November 18th, without usual pain and difficulty in passing water. Menstruation itself was absolutely painless, while previous menstruation was very painful. Local condition seems also improved. Uterus slightly movable, hard mass in left side seemed softer. December 3d—Feeling very well, better than in years. Local condition changing. Uterus getting more movable. Exudate in left side getting softer. December 20th—Menstruation came on December 12th, lasting five days—no pain whatever, no urinary symptoms preceding, feeling good, headache gone. Examination: Abdomen softer—uterus more movable, but still cannot be raised up. Exudate in left fornix rapidly becoming softer—beginning to differentiate ovary from mass. January 20th—Patient symptomatically cured. Examination: Uterus more movable. Exudate softer—ovary now distinctly felt—no pain on manipulation. Change in local conditions very marked.

NOTE—This patient has been treated twice weekly with fair regularity with the result that the anatomical improvement is more marked than in Case IV.

Case VI.—M. G., age 24; married; III. para, youngest 2 years. No miscarriages; menstruation, regular, 4-weekly, 4-5 days, amount moderate, considerable pain before and during flow. Complains of pain in left ovarian region and back, slight leucorrhœal discharge. Examination: Uterus forward, position good. Right ovary high up and apparently normal. Left ovary felt on lower plane and not in cul-de-sac. Considerably enlarged and very sensitive to touch. November 14th—Put on parotid gland, with occasional local treatment, as she could not spare the time for regular treatment. November 25th—Says she feels better, pains less, though still has some in left side. Local condition about same—left ovary possibly smaller and

less tender. December 24th—She has been feeling very well up to last week, when capsules gave out. Examination: Right ovary negative, left ovary distinctly smaller and less painful. January 30th—Feeling perfectly well. Right ovary negative, left, apparently normal in size but still slightly more painful than other on manipulation. Considers herself cured.

Case VII.—M.C., age 25 years; married 6 years; nullipara; no miscarriages. This patient was first seen by me in July, 1898. Her menstruation was regular, 4-weekly, 4 to 5 days, moderate amount, no pain, she complained of constant pain in back, and both iliac regions, particularly left. Leucorrhœal discharge, also dyspareunia. These symptoms had continued during the last year, but more acutely for last two months. On examination the uterus was found to be retroflexed and adherent. Left appendage much enlarged and very tender, prolapsed into cul-de-sac. Right ovary was enlarged somewhat, but not so tender as left. Upon opening the abdomen, which I did several days later, I found the conditions as above described, the uterus strongly bound down by adhesions, and the left appendage matted together and adherent to everything in reach. Upon freeing the adhesions it was found to be hopelessly diseased, and removed. The right ovary was freed from the few slight adhesions about it, carefully examined, and found to be slightly enlarged with a small hæmatoma and a few small follicular cysts, which were punctured, and the ovary returned. The uterus was then suspended to the *parietal peritonæal* in the usual way and her recovery was uneventful. I next saw her, November 1st, when she said she had been feeling very well up to last week or so, when she noticed pain in right iliac region, which had steadily grown worse. Examination showed uterus in good position, left side negative. Right ovary quite large and tender. Treatment: Ichthyol, tampons, iodine, to vaginal vault twice weekly, together with usual hot douches. December 15th—Condition no better—pain in right side getting more severe, ovary large and very painful, treatment continued. December 30th—Right ovary now quite large and very tender; second operation suggested but not entertained. January 6th—No change, rather getting worse, put on parotid extract. January 20th—Has felt much better, pain in side entirely gone, improvement began on second day after taking capsules. Examination shows ovary now only slightly larger than normal, no tenderness. February—Reports condition good. Considers herself cured. March 17th—Condition good.

Case VIII.—A. DeR., 28 years; III para, youngest 2 years; miscarriages, 1, 1 year ago; menstruation irregular, 3-4 weekly, 6-8 days;

amount free, severe pains before and during flow, also complains of pains in back and left ovarian region; slight leucorrhœal discharge. This patient was first seen in consultation, August 15th, 1898; she then had a large pelvic hæmatocele which was then evacuated by posterior vaginal section. Recovery was rapid and uneventful. On November 14th, she was sent to my clinic with the symptoms above enumerated. Menstruation has been very painful since operation, has had to go to bed for several days. Examination: Uterus large, forward, slightly movable, but only with considerable pain. Left side, small indefinite mass in left fornix, not very sensitive to pressure, bands of adhesions felt in cul-de-sac and toward left side. Ovary not made out in mass of exudate. Right side, ovary felt apparently normal. November 14th—Put on parotid gland gr. iii t.i.d. No local treatment. November 23d—Menstruation just commenced, very slight pain, as shown by being able to be out, says she feels much better since taking capsules. December 10th—Menstruation began November 23d, lasting 6 days, with exception of slight pain at beginning almost without pain, while last month was in bed 3 days. She is feeling very well at present, better than at any time during last 6 months. January 10th—Supply of capsules, out for 5 days, and feels slight pains again—says she feels much better when taking them. Examination: Uterus quite freely movable. Exudate in cul-de-sac nearly gone, ovary can now be made out—somewhat large and tender on pressure. Considers herself cured.

Case IX.—M. R., age 20 years; nullipara; no miscarriages. As the history of this case is somewhat similar to No. VII., with the exception that in this case a post-vaginal section was done instead of abdominal section, as in other, I will briefly run over previous history up to time of taking the parotid extract. When first seen, about one year ago, she was suffering from what I diagnosed to be a right salpingo-oöphoritis of probable gonorrhœal origin. She complained of pain in right ovarian region and had slight rise of temperature and pulse. Examination: Uterus small, position good. Left appendage negative. Right-side ovary and tube enlarged and tender, tenderness out of proportion to increase in size. Under constant treatment of ichthyol tampons, iodine, and hot douches, she was kept fairly comfortable, but would have exacerbations at two and three-months' intervals. Operation was suggested and accepted with permission to do vaginal section and curettage only. After curetting uterus, posterior cul-de-sac was opened and right tube and ovary drawn down and examined. They were both somewhat enlarged and congested but did not seem diseased

enough to remove, adhesions were broken up and the appendage pushed well upward and the incision closed. Recovery was uneventful. She was well for the next six months, when she began to complain of pain in right side again. Examination showed uterus in good position, left ovary normal. Right ovary and tube both down again, enlarged and painful, could not be pushed up on account of pain, with these conditions getting worse at each visit; she was put on parotid gland November 1st. November 16th—Patient feeling much better, no pain. Right appendage seems smaller and is very much less tender—also seems more movable. December 16th—She has been very well, only came to report and renew medicine, appendage is certainly much smaller, not at all sensitive, can be pushed well back and upwards into proper position, considers herself cured.

Cases X., XI., and XII.—These cases being so nearly alike in all essential features will be grouped together. Ages 20, 26, and 30. Their symptoms were all so similar that it would be needless repetition to individualize them. They complained of irregular menstruation, 3-4 weekly, lasting 5 to 6 days, free in amount. Severe pains before and during menstruation. They all complained of pains in the back, particularly left side, also the usual headaches, constipation, and nervous symptoms accompanying pelvic diseases. Examination showed local conditions to vary very little. In one case the uterus was retroverted to 2° , lying almost in the axis of the vagina, on top of, and adherent to, a very large and exquisitely sensitive ovary. In the other two cases the uterus was more retroversio-flexed, and both were adherent to a conglomerate mass of ovary tube and exudate in left fornix. The right ovary in each case seemed only slightly involved, judging from their apparent size and tenderness. The previous treatment in each case was identical and consisted of abdomino-pelvic massage in the following manner: Two fingers of the left hand are placed in the vagina well behind the cervix, the uterus being in a position of artificial descensus by traction on a tenaculum caught in the posterior lip of the cervix, the amount of traction being carefully regulated by feelings of the patient, then by lifting up the uterus as much as possible from below, and with gentle and gradually deepening pressure with the fingers of the right hand on the abdomen above the organ is gently stroked, pushed, and pulled by the regular circular massage movements; under this treatment the adhesion is soon loosened up and the uterus could be gradually raised. In each case the cervix was dilated, uterus irrigated and curetted. In one case the parotid gland was given for a month before the curetting with the result that the symptoms were all relieved, ad-

hesions softened very rapidly and general condition so much improved that the operation seemed hardly as much indicated as before. The second case took no parotids, the ovary remained very tender and after a short course of local treatment she became discouraged and stopped. She returned in about one month still discouraged and with considerable pain, and began treatment again and was now put on parotids. Improvement was admitted after second day—local and general improvement now progressing satisfactorily—still under treatment—while the third case took no parotids before curetting, but was put on them immediately afterward and improved both locally and generally in a very rapid and satisfactory manner.

Cases XIII., XIV.—The clinical and anatomical features of these cases being practically the same I shall group them together also. The symptoms from which they sought relief were: Irregular menstruation, very severe pain before and during flow. One case always going to bed for from one to three days during menstruation, while the other kept around, but was very miserable and could not attend to household duties. Constant pain in back and ovarian regions, dyspareunia, headaches, and nervousness. Duration of disease in one case, 17 years, other, 15 years, one following child-birth, while the other had a miscarriage. Examination in one case showed large retroflexed and adherent uterus with large masses on either side—very sensitive to pressure—while in the other the uterus was retroflexed and adherent also, the left appendage only being involved, but binding the uterus down very firmly and drawing it slightly toward left side. Abdominal operation was advised in both cases and declined, but posterior vaginal section was permitted in each, which I did. Personally, I am not fond of this operation, and only do it in these conditions when I am forced to; however, more through good fortune than skill, I have had at least symptomatic success in most of them thus far. There was nothing of interest in the operations as far as the subject of this paper is concerned, except in confirming the diagnosis. The adhesions were broken up, as far as possible, the fundus of uterus pushed up and appendages freed, and the cul-de-sac packed with gauze, which I believe is the usual technique. The interesting point in the two cases is the subsequent history. One was done one year ago and has continued treatment up to the present time. Her symptoms were very markedly relieved and she was entirely satisfied with the results of the operation but, notwithstanding the continued routine treatment already described, the ovaries remained too sensitive to permit the introduction of a pessary to retain the now replacable retroverted uterus and enlarged prolapsed ovaries,

so that unless the uterus was kept up by tampons, the pains in the back caused by the uterus falling backwards, would return. This condition continued until October last, when I put her on the parotid capsules. The improvement was noticed after the second day, and in two months she was absolutely cured from a symptomatic point of view. The change in the local condition was almost as equally marked. The uterus still falls downward, but the ovaries have diminished one-third original size and are not at all sensitive, so that even when the uterus is backward the effect of the pressure is not felt for some time. To return to the other case. Immediately after the operation, or as soon as the stomach could retain food, the capsules were begun, with the result that, although the operation was very difficult, the adhesions firm, the traumatism, incident to operations of the kind severe, the convalescence was very rapid, and at the end of three months her condition was practically as good as the other at the end of a year.

NOTE.—I have seen both of these cases within a week and both report favorably.

Cases XV., XVI., XVII., XVIII., XIX., XX.—These cases while, of course, differing from each other in various ways, have practically the same symptomatology—constant pain, more or less severe, in the back and ovarian regions, causing some only inconvenience, while others it nearly incapacitated for their ordinary duties of life; leucorrhœal discharge and irregular menstruation accompanied by pain, varying in degree from severe to excessive, either preceding or during flow; dyspareunia varying in degree, together with the usual neurosis accompanying pelvic diseases of any considerable duration. The local conditions can be grouped and described in the same way. The uterus in the first three cases was retroverted and adherent, while in the others it was practically normal in position. The appendages in the first group were bilaterally much enlarged, very tender, prolapsed, and adherent, while in the last three cases they were distinctly enlarged and quite sensitive on palpation. All of the cases in the first group had been advised abdominal operation by myself and others and one had been curetted without much effect. Of the second group, one had been curetted, another had had one ovary removed by abdominal operation, and the other had had a posterior section for pelvic abscess, notwithstanding all of which they were still far from being well and comfortable. None of these cases can be said to have had systematic local treatment, for the reason that in some at first massage caused considerable pain, and the tampons could not be tolerated, while, of the others, two lived out of town and could only get in occasionally. Although I cannot report

any of these cases as cured, still they have all shown remarkable symptomatic improvement. The retroverted and adherent uteri of the first group have not cast off their adhesions and sprung to their proper places, but they do not seem to be so firmly adherent, and the prolapsed and enlarged ovaries and tubes certainly seem smaller and less sensitive than as before while they all claim to *feel* very much better. I feel sure that under regular abdomino-pelvic massage and tamponade I could hasten their resolution very much. In the other group the post-section case considers herself cured, but I still find some exudate in the cul-de-sac, while the other two are wonderfully improved symptomatically and appreciably so, anatomically.

There are a number of other conditions in which I have studied the effect of parotid and mammary gland extracts, but as there are hardly enough of each to draw accurate conclusions, I will reserve them for a future time.

In briefly summarizing these cases, I will not attempt any physiological explanation of the action of the parotid gland, but will simply state some of its effects as I have observed them.

I. It has seemed to relieve the pains of dysmenorrhœa in all cases, without regard to alleged causes and present conditions, to a greater extent than any of the numerous so-called uterine sedatives which I have been able to obtain.

II. It relieves those dull, aching pains referred to the back and ovarian regions, usually designated by those familiar, though vague and unsatisfying terms "reflex pains, neuroses, ovarian neuralgia," etc.

III. Menstruation when deranged becomes more regular as to periodicity and less in amount and shorter in duration.

IV. During its exhibition pelvic exudate seem to soften and become absorbed more rapidly under abdomino-pelvic massage.

V. The general health, strength, appetite, and spirits seem also to improve under its use, and those dull headaches, which constitute such a persistent and annoying symptom in these cases, is almost invariably relieved and in some disappears entirely.

VI. The only counter-indication that I have thus far met with in its use, has been in cases of the artificial climateric, in which cases the flashes of heat and cold were distinctly made more frequent and severe.

I realize, of course, that the value of a paper of this kind depends entirely on the accuracy of diagnosis and clinical observations, and I can only say that with my daily experience, from a fairly large number of these cases from weeks to months and from months to years, with the additional advantage of confirming my diagnosis on the operating-table

when necessity demands, I feel sure that in this new product we have an agency for good in the treatment of the class of cases indicated that offers great promise, and would certainly seem worthy of extended and careful observations.

With all due allowance for the enthusiasm of investigators, one has only to look at the current literature to see that daily progress is being made along this line. In the "Year-Book of Treatment for 1899"—in looking over the gynæcological field for the year the editor says: "In the same line organotherapy is coming more into vogue, and inoperable cases of carcinoma and uterine fibroma, and the sufferers from the menopausal symptoms, induced or natural, are feeling the benefits of these progressive measures." And again, an editorial comment in a Philadelphia weekly says: "It is not bacteriological research alone that has been productive of such lasting benefit to mankind. The study of the etiology of other diseases that are probably not of an infectious nature, but dependent upon disturbances of metabolism, and of the *internal* secretions of the body, and it is quite obvious that in the study of the internal secretions, both of the ductless glands as well as those provided with an excretory duct, we are but entering a domain fraught with highly interesting and important data." That these ductless glands do exert some mysterious, unknown influence upon each other is now unquestioned. The so-called "sympathetic relation" has long been known, and Bland Sutton, in speaking of parotitis says: "Inflammation of the parotid gland has been many times noticed during recovery from surgical procedures, especially after abdominal operations and with exceptional frequency during convalescence from ovariectomy." Mr. Stephen Paget analyzed 101 cases of parotitis following injury or disease of the abdomen and pelvis. Skene Keith reported a case of suppuration of the parotid gland following ovariectomy (Edin. Obstet. Soc. XI., 119, 1884), in which he says: "It is an interesting question whether or not cases of *parotitis* following ovariectomy are examples of reverse metastasis or not." Dr. N. T. Brewis of Edinburgh, saw two cases of parotitis after ovariectomy in Dr. McDonald's practice. In the first case the left parotid gland was affected, the right ovary having been removed. No suppuration in either case.

Again, Dr. N. T. Brewis in a paper on "Parotitis following Abdominal Operations on the Pelvic Organs" (Edin. Obst. Soc., XVIII., 275), reports another case, the interesting point to me, in the light of our present knowledge, or rather our search for knowledge on this subject being in the fact that the indication for the operation was constant pain referred to the left ovarian region and on operation nothing patho-

logical could be found. This leads me to conclude with a few incidental remarks the importance of pelvic diagnosis in these cases. I believe that far too little importance has been attached to the value and necessity of an accurate diagnosis, and that the teaching so generally given to "cut down and make your diagnosis afterward," is most pernicious for various reasons, foremost among which are, that it puts the lives and future happiness of thousands of women into the hands of those ambitious amateurs in surgery whose amount of so-called "nerve" may be greatly in excess of their experience and judgment. A sufficient amount of technical skill in abdominal surgery is much more easily acquired than a diagnostic skill, with the result that conservative measures are frequently neglected or ineffectively applied through ignorance, and in consequence, many cases that were perfectly amenable to proper medical treatment then become surgical cases, and in far too many instances, organs that could have been saved are needlessly sacrificed. The time has long since passed when the successful removal of the appendages is wondered at, but among the men who have the true interest both of their patients and the profession at heart, it is rather incumbent upon the operator to prove that it was necessary to remove them at all.

This is a subject which has been harped upon for so long that we have grown accustomed to it and it hardly seems germane to the subject of this paper, but when you consider it in connection with Dr. Billings' birth-rate statistics ("*American Year-Book*," 1899), its significance will be at once apparent. The birth-rate in France is lower than in any other country, being 22 in every 1000 inhabitants. In 1890 the birth-rate in the United States was 26.09 to 1000. In 1894 statistics showed in France that the birth-rate had decreased 2.7 per 1000 since the previous decade. Dr. Billings' statistics in 1890 showed that the birth-rate in the United States had decreased 4.27 per 1000 since 1880. At the same rate of decrease, at the present time our birth-rate must be 23.69 per 1000, or less than 2 per 1000 of the rate that so startled France. The fact that it has dropped since 1880 from 30.95 to 23.69 per 1000 ought to give rise to some thought at least as to its probable cause. The most potent factor in this decrease, abortion, we will not consider, but from a gynæcological standpoint it may not be uninteresting to consider, as one of the possible causes of France's decreasing birth-rate, the fact that 500,000 French women have had their ovaries removed since 1883. How much effect ovariectomy has had on the birth-rate it would be hard to estimate, but the removal of half-a-million women from a country during a period of ten years from any cause, would hardly tend to

increase the birth-rate. I do not care to do anything so commonplace as to "sound a warning note" but, in considering our natural progressive tendencies, our low rate of operative mortality, the rapidly increasing numbers of gynæcological and gynæcologico-general surgeons, with the increasing hospital inducements and facilities, etc., for operative work, this phase of the subject would not seem to be entirely without interest and weight nor so foreign to the subject of the paper as would at first appear. Therefore, any therapeutical agent seeming as this one surely does, to combat the *tendency* to pathological changes in these widespread and all-important conditions which we have been considering, assumes not only great professional interest, but would even appear to be of National importance as well and, in the words of Dr. Bell, regarding the study of these glandular extracts: "An immense field for observation seems to be opening out and will surely repay any amount of time expended upon elucidating these recondite physiological problems."

PERSONAL EXPERIENCE WITH TUFFIER'S ANGIOTRIBE.*

BY I. S. STONE, M.D., WASHINGTON, D. C.

The various methods of securing hæmostasis by the use of compression instruments has already been recited in your hearing by Dr. Clement Cleveland.

We had two very good reasons for trying the angiotribe. My first was a result of Dr. Bantock's example in clamping every pedicle with powerful forceps and then tying the ligature in the resulting sulcus. This practice we have followed for eleven years and to this practice we owe an unbroken record of never having lost a case from slipping of a ligature. We also believe that we were able to use smaller ligature material, and that hæmorrhage was largely checked by the compression alone. A second reason was the behavior of certain cases after supravaginal hysterectomy, and in other cases where we believe the silk ligatures were infected. We have thus seen abscesses form under the peritonæal flap, producing phlebitis and occasionally a discharge of

* Read before the American Gynæcological Society, May 24, 1899.

one or more silk ligatures. Finally, in the last year, two sudden deaths, one on the 12th day and another in the third week, from embolism. Soon after this while on a visit in New York, I had the pleasure of witnessing the use of this instrument by Dr. Cleveland, and he permitted me to have an instrument made after the model in his possession.

Its Field of Usefulness.

In all cases where fairly healthy firm tissues permit its use, the angiotribe as a compressor is nearly perfect in its action. In all necrotic tissues, or in myomatous or omental structures its work has not been altogether satisfactory, and further study of its action is necessary.

There is no reason why the ureters should be endangered by its use in supravaginal hysterectomy. Contrary to what has been predicted by many, the stump is not a mass of mangled and devitalized tissue, but a very small, neat, almost invisible line.

Pain.

The cases mentioned in this report have had almost no pain. The contrast between the suffering of patients treated by the wire clamp and after this method of performing hysterectomy, is striking and convincing, and under no circumstances would the writer return to the clamp or wire, or even use *en masse* ligatures.

It is not customary to witness severe pain after pelvic operations, where *en masse* ligatures are discarded, and we think patients subjected to supravaginal amputation should have as little pain as after a double salpingo-oöphorectomy.

It has been claimed by some that the angiotribe acts much in the same manner as the *écraseur*. Surely no one who has seen the work of the two instruments would make such a statement. The same may be said of torsion, which may do very well in amputations, but we would scarcely feel so secure should we use this method of hæmostasis in abdominal work.

The Instrument Itself.

It is difficult to imagine how any one could invent a heavier and a more clumsy instrument than this. The force is not easily applied and there is considerable labor necessary in turning the screw. It is also desirable to have parallel jaws to make equal pressure on all parts of the pedicle.

Report of Operations.

Miss H., March 31, 1899. Left salpingo-oöphorectomy. Compression of ovarian ligament $2\frac{1}{2}$ minutes. Compression of tube and adjoining broad ligament near cornu $2\frac{1}{2}$ minutes, no catgut or other suture material used in pedicle. Patient made an ideal recovery.

Mrs. F., April 19, 1899. Double salpingo-oöphorectomy for pus. Angiotribe used as in first case, applying it twice on each side. No suture material used within abdomen. Ideal recovery.

Mrs. L., April 22, 1899. Left tubal abortion. Double salpingo-oöphorectomy. Removal of large hæmatoma with specimen. Ovary on left side cystic and also removed. Method of application as before. No sutures required in broad ligament. Ideal recovery.

Miss H., April 26, 1899. Double salpingo-oöphorectomy for removal of large pus collections. This patient had been ill for many months and had previously had vaginal puncture with only temporary relief. The ovarian arteries were compressed with the angiotribe after the annexa were cut away, and temporarily clamped with forceps. Fine catgut used in the uterine cornua owing to friable nature of the tissues, we feared to trust the compression only. No unsatisfactory result of operation. Patient made uneventful recovery.

Mrs. W., April 29, 1899. Left salpingo-oöphorectomy for pyosalpingitis. No sutures within abdomen. Ideal recovery.

Mrs. B. Myomectomy. Large pedunculated myofibroma. Pedicle from right upper surface near the cornu about $\frac{3}{4}$ inch in diameter but soft and compressible. Tumor cut away, angiotribe applied 5 minutes and removed leaving a thin pedicle which appeared to consist of the two peritonæal coats without muscular or cellular tissue. Slight hæmorrhage occurred, necessitating catgut sutures. Recovery without incident.

Mrs. M., 1899. Supravaginal hysterectomy tumor filling the lower abdominal cavity and extending one inch above umbilicus. A soft interstitial myoma, simulating pregnancy. Vessels large and broad ligaments varicose. Angiotribe applied $4\frac{1}{2}$ minutes on each side down to uterine artery which was included on the left side. Section of left ligament absolutely without hæmorrhage. On the right side the instrument was twice applied and one small vessel finally sutured to check bleeding. Catgut used to close uterine and peritonæal flaps. Patient appeared to suffer less pain than usual. In fact almost no pain. No shock or sign of hæmorrhage after this operation. Patient recovered promptly.

Mrs. H., May 9, 1899. Supravaginal hysterectomy. This patient had miscarried at the end of fifth month. Her puerperium was marked by severe sepsis. Temperature and pulse both indicating puerperal infection. Cultures show staphylococci pyogenes. Patient had continued pain in upper abdomen, but finally recovered sufficiently to have hysterectomy three weeks after the miscarriage.

A tumor was found, apparently a myoma, reaching above the umbilicus, and above this a fluctuating mass suggesting cystic degeneration, or tubercular disease. In short, the case was one of many complications and great difficulty. The upper third had undergone cystic degeneration and the transverse colon and omentum had encompassed this, being united by firm adhesions and furnished the explanation of the pain and other evidence of localized peritonitis after her miscarriage. The angiotribe gave perfectly satisfactory results as before, and but a small amount of fine catgut was used in completing the toilet of the peritonæum.

The patient had no sign of post-operative hæmorrhage and made a very rapid recovery.

Ovariectomy.

Miss F. Operation March 29, 1899. Double ovarian carcinosis. Tumors approximating fifteen pounds in weight. Angiotribe to pedicles. Result perfect from operative standpoint. Patient will have recurrence in other organs.

Mrs. C., April 19, 1899. Papillomatous multilocular cyst of left ovary weighing fifty pounds. Very broad soft pedicle. Adhesions very extensive to parietes and omentum. The angiotribe is not altogether satisfactory in preventing hæmorrhage from the omentum, and catgut is necessary to secure the vessels. Patient gave no sign of hæmorrhage and recovered from the operation.

Mrs. H., April 22, 1899. Ovariectomy for dermoid cyst with long pedicle. Hæmostasis perfectly satisfactory. Prompt recovery.

VAGINAL INCISION AND DRAINAGE FOR SIMPLE BROAD LIGAMENT CYSTS.*

BY THOMAS J. WATKINS, M.D., CHICAGO.

This operation is proposed for the treatment of simple non-pedunculated broad-ligament-cysts only. It is not a revival of the old operation of tapping, which was usually done through the abdomen, did not perfectly empty the sac, and secured no, or imperfect, drainage. In this operation the most dependent part of the tumor is freely opened, the cyst completely emptied, and perfect drainage established. The cyst cavity does, I believe, become entirely obliterated, principally by contraction and partly by agglutination of its walls.

Is it advisable to substitute an operation for transperitonæal enucleation, which has become the present generally accepted method of treatment of these tumors? The advantages of this operation are, if remote results prove to be satisfactory, that it substitutes a minor for a capital operation; an operation that is followed by little or no pain for one that is usually attended by much suffering; one which affects the patient's muscular and nervous system comparatively little for one which usually requires months for the patients to regain their usual muscular and nervous stability, not to mention the danger of adhesions, intestinal complications, suppurations, and hernia of the transperitonæal operation. No organs are removed and no sutures or ligatures are required.

It is not necessary for me to dilate upon the seriousness of the removal of these cysts by the transperitonæal method before the members of this Society. You are all aware that the enucleation is often difficult, that the sac-wall often tears so that it cannot be completely removed, that bleeding is sometimes difficult to control and the loss of blood large, that the cavity which remains after removal of the cysts cannot always be completely closed by sutures without resorting to hysterectomy, and that exudates and adhesions are not infrequent post-operative complications. The operation of enucleation is undoubtedly more often followed by death or a prolonged recovery than is generally supposed.

The operation of enucleation by the transperitonæal method is usually a serious procedure for a comparatively simple pathological condition.

* Read before the American Gynæcological Society, May 24, 1899.

The unsatisfactory result of the operation of transperitonæal enucleation is indicated by the recent writings of Drs. R. B. Hall and C. K. Fleming, which advocate abdominal hysterectomy for the relief of the condition. The writer has had no deaths following the operation of enucleation, but has had cases and observed others where exudates with more or less adhesions, and neurasthenia, have been serious post-operative complications.

The principal, if not the entire, objections to the operation of vaginal incision and drainage are the dangers of refilling of the cyst, malignant disease, and difficulty of diagnosis.

The number of these operations performed and the length of time which has elapsed since the operations were made is not sufficient to definitely estimate the danger of recurrence.

I have made the operation five times, two of them three years ago, two two years ago, and one during the last year, without any recurrence to my knowledge.

The remote results of the old method of tapping is only suggestive as regards the danger of recurrence after this operation because refilling of the cyst is much more liable to occur after the former operation, which did not completely empty the cyst or secure perfect drainage, than after this one. Winckel states that "a cure may be expected from puncture when the contents are thin or of low specific gravity." "Charles Clay tapped forty cases and the cyst refilled only six times." Tait, however, doubts if the tapping ever results in a cure, and mentions a case where the cyst refilled years after it was tapped. Goodell believed that a large number of cures resulted from tapping, and advised in all cases "tapping and later enucleating, if necessary." Washington L. Atlee and Spencer Wells obtained some good results from simply removing a portion of the top of the tumor, so as to make the cyst cavity continuous with the abdominal cavity. Spencer Wells said that parovarian cysts have the peculiarity of healing entirely after evacuation.

Rupture of the cyst into the abdominal cavity sometimes results in recovery and sometimes the cyst refills. I find no case in the literature where the cyst has refilled after it has been sutured into the abdominal wound and drained. If they do not fill after drainage through the abdominal incision they certainly will not refill after they are drained through the vagina, because the latter operation insures perfect drainage, which the former does not do.

Eight years ago I observed a case of rupture of a broad-ligament

cyst as large as a six-months' pregnant uterus. A recent examination shows no recurrence of the tumor.

In two cases, which were among my first abdominal sections, I failed to enucleate the parovarian cyst, and concluded the operation by simply evacuating the fluid, and these cysts had not refilled when the patients were last seen, one three years and the other about six years after operation.

From a theoretical standpoint the danger of refilling of a simple broad-ligament cyst after incision and drainage should not be much more than the danger of refilling of a hydrocele after incision and drainage.

Most of the authors whom I have had the opportunity to consult say little or nothing of malignant disease of parovarian cysts. Tait, however, says "when the tumors have reached large size the epithelium becomes dendritic and papillomatous and some of these simple-looking tumors are amongst the most malignant things I have met with." Tait thinks that their tendency to become malignant is a strong argument against tapping them. One of the Fellows of this Society in 1891 reported to this Society a primary carcinoma of the parovarium. It would seem difficult to prove in his case that the carcinoma was primarily parovarian, "because the ovary was completely destroyed so that nothing remained by which the ovary could be identified." It seems proven that papillomata do develop infrequently in parovarian cysts. The knowledge that parovarian cysts may be malignant is not of much importance in this connection, as this operation is suggested for the treatment of simple broad-ligament cysts only. It is important, however, to determine, if possible, the danger of the development of malignant disease after the cyst has been obliterated by incision and drainage. The almost complete or entire absence in the literature of the mention of the development of malignancy after the old operation of tapping, etc., would indicate that the danger is extremely slight.

Diagnosis.—The frequent mistakes made by surgeons in differentiating broad-ligament cysts from other pelvic neoplasms best illustrate the difficulty of diagnosis. It is not my province to attempt to give in detail the differential diagnosis between simple broad-ligament cysts and other cysts before this assembly of eminent specialists. By means of vaginal incision the diagnosis between intraligamentary and other cysts is easily determined in most instances by the relation of the cyst to the peritoneum. Points of differentiation between a simple broad-ligament cyst and other intraligamentary cysts will be the thickness of the cyst-wall, the color and weight of the fluid, the smoothness or rough-

ness of the cyst-wall, the presence or absence of adhesions, uniform or variable thickness of the cyst-wall, and whether unilocular or multilocular.

From these considerations, I believe, the conclusion can be safely made that the increased danger of death, the greater suffering, and the more prolonged recovery consequent upon transperitonæal enucleation is to be more dreaded than the danger of refilling of the cyst, the development of malignancy, and errors in diagnosis which may follow incision and drainage of simple broad-ligament cysts.

Technique of Operation.

1. Preparation of the patient.

The patient should receive the preparation which is usually made for abdominal and vaginal operations. The abdomen is prepared so as to permit free conjoined palpation of the tumor under anæsthesia, and so as to be ready in case it becomes advisable to complete the operation by abdominal section.

2. Position of the patient.

The patient is placed in the lithotomy position, the vulva and vagina recleansed, and the uterus curetted if the source of any leucorrhœal discharge.

3. Opening of the sac.

The cervix is drawn downward, forward, and fixed by means of a bullet forceps fastened to the posterior lip. An incision, 1 to 1½ inches long, is made through the vaginal wall posterior and lateral to the cervix over the site of the tumor. The connective tissue between the incision and the cyst is now separated by dissection with the finger, care being taken not to perforate the peritoneum. The finger can be easily pushed through the thin wall of the cyst or the cyst may be punctured with a sharp-pointed scissors or forceps. The opening into the cyst is now increased to the size of the vaginal incision by traction with the fingers, and the cyst cavity and vagina sponged dry with gauze.

4. Drainage of the cyst.

The edges of the opening into the sac are now held widely apart with long vaginal restrictors and the sac and vagina are packed with a continuous strip of iodoform gauze. The irritation produced by the iodine set free from the gauze is an important factor in guarding against refilling of the sac.

5. After-treatment.

At the end of forty-eight hours, the vaginal packing and about one-fifth of the other packing is removed. The vagina is then sponged dry and repacked. This is repeated on each following day until all the drain is removed, which will be about the end of one week. Vaginal douches can now be given when necessary for cleanliness. The sac contracts as fast as the gauze is removed, as it will be remembered that these cysts are almost invariably free from adhesions and consequently easily collapse. With this treatment there is little or no danger of supuration resulting or of a sinus remaining.

Should the tumor, after the vaginal incision is made, prove to be an ovarian or malignant cyst, the sac may be punctured and entirely removed through the vaginal incision, or the operation may be completed by an abdominal section. The vaginal section will not especially or at all complicate the abdominal section, and it may facilitate it by establishing a route for drainage.

Should the cyst prove to be a thick-walled intraligamentary neoplasm it should be incised and enucleated on account of the increased danger from malignancy and refilling from leaving the sac, and because such an enucleation can be easily accomplished with comparative safety, through a vaginal incision.

An abstract of report of cases.

Case I.—Mrs. S. C., age 25. Symptoms were an enlargement in lower part of abdomen, slight pelvic pains and leucorrhœa. Examination showed a cystic tumor in the right segment of the pelvis. A probable diagnosis of broad ligament cyst was made on account of: First, a marked lateral displacement of the uterus and absence of as much anterior displacement of the uterus as usually produced by an ovarian cyst. Second, a more intimate relation with the uterus than usually occurs with an ovarian cyst. Third, rectal examination seemed to show less thickness of the broad ligament anterior to the tumor than occurs in the presence of an ovarian tumor and also showed an intimate relation of the tumor to the lateral wall of the uterus and pelvis. The tumor also produced slight bulging of the vagina. Operation March 20, 1896. The vaginal wall was incised, a small amount of connective tissue, which was found between the vaginal wall and the tumor was separated with the finger and a thin cyst wall was punctured with the finger and about one quart of fluid was evacuated. The operation was almost bloodless. A double tabular drain was inserted and sutured in place. The recovery was satisfactory and the tubes were found expelled from the sac on the tenth day, the fixation sutures having cut through the tissues. Vaginal douches were now given and the sinus was apparently healed

at the end of three weeks from the time of operation, when she was discharged from the hospital.

Case II.—Mrs. M., age 30. Right broad ligament cyst containing about one quart of fluid diagnosed before operation. Operation, August, 1896. Vaginal incision and tubular drainage. The drain was left in place one week. A sinus remained and some suppuration occurred for about three weeks. For one or two days she had slight symptoms of infection. I have recently heard from this patient and she has remained perfectly well.

Case III.—Mrs. M. B., age 34. Examination showed a mass to the left of the uterus. It was uncertain whether the mass was cystic or inflammatory in origin as the patient gave the history of having had numerous attacks of pelvic pain, accompanied by chills and fever. An exploratory incision was made November 11, 1897, posterior to the cervix and a thin-walled intra-ligamentary cyst diagnosed. An attempt was made to enucleate the cyst, as it was a small one containing only about one-half pint of fluid. The cyst ruptured, however, and was only partially removed, because the sac tore on account of great thinness of its walls. The sac was drained by gauze instead of tubes on account of the sinuses and suppuration which had followed the use of the tubes in the former cases. The patient made a satisfactory recovery except for the occurrence of slight sepsis on the ninth day, which was due to a small piece of gauze which had been left by mistake in the cyst cavity. She was discharged from the hospital on the fourteenth day after the operation apparently cured.

Case IV.—Mrs. N., age 25. Diagnosis left broad ligament cyst, laceration of the perinæum and cervix. Operation, January 26, 1897. Cyst incised and drained with gauze per vaginam. Lacerations repaired. All the gauze was removed by the end of one week. No suppuration occurred. Result from trachelorrhaphy and perinæorrhaphy good. The patient was discharged from the hospital at the end of three weeks cured. A recent examination shows no evidence of refilling of the sac.

Case V.—Mrs. K. H., age 37. A large right ovarian cyst was removed September 19, 1898, through a vaginal incision posterior to the cervix, when a broad ligament cyst, containing about one pint of fluid, was found on the left side. This was incised and drained as above described. She made a satisfactory recovery and was well when last seen, about six months after the operation.

In one case I incised a broad ligament cyst which contained about two quarts of fluid through the vagina, and which proved to be a

dermoid. The tumor produced a marked bulging of the posterior vaginal wall which in itself demonstrated the growth to be intra-ligamentary. Only one ligature was required. The tumor, in all probability, originated in the parophoron. The cyst was easily enucleated through the vagina, much more so than would have been possible through an abdominal incision and the recovery was much more rapid and comfortable than would have followed a trans-peritonæal enucleation.

In none of the patients operated has the tumor been large. The recoveries have been about as free from suffering as is usual after a trachelorrhaphy except at the time of removal of the gauze from the cyst cavity.

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THE INFRAPUBIC ROUTE IN SURGERY OF THE UTERUS AND ITS ADNEXA.*

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Four years ago when Drs. Jacobs, Henrotin, and I read papers before the meeting of this society in Baltimore upon surgery of the uterus and its adnexa per vaginam, the subject was so thoroughly discussed by the Fellows, and all questions in favor of the infra and suprapubic methods of dealing with diseases of these structures were so carefully considered, that I then believed there would practically be a unanimity of opinion as to what cases should be assigned to each of these methods. I find, however, that notwithstanding the fact that this question has since then engaged the attention of the best specialists in this country and abroad, we are but little nearer a consensus of opinion than we were before that meeting, and the arguments against the vaginal method presented and answered upon that occasion are to-day urged with the same earnestness and honesty, although the experience of many men has demonstrated that facts do not justify such objections.

It will not be claimed that there are no diseases of the uterus or the pelvic structures that cannot be successfully treated by either the supra or the infrapubic method, but nearly every objection to the latter is the result of a lack of observation or experience. I have recently read with no little degree of surprise arguments against vaginal hysterectomy in the discussion of a paper before a medical society in Philadelphia. Were not these men representative abdominal and pelvic surgeons I would not feel inclined to refer to their objections for I would imagine that such opinions were unusual. This discussion leaves the conviction that many surgeons have not carefully studied the technique of hysterectomy, etc., per vaginam, but reproduce the theoretical arguments against such surgery that were advanced by the great surgeons of Paris in their opposition to the late Peán when he first emphasized his success in this kind of work. If we will read the arguments of the men at that time, and then the discussions against the vaginal method offered now, we will see the striking similarity, and the same evidence

* Read before the American Gynecological Society, May 25, 1899.

of the theoretical character. But I dare say that had all our American surgeons practically tested this method, as did Segond, Richelot, Pozzi, etc., they would have changed their opinions just as these men did, and would have learned that the objections they had supposed to exist are not real.

An experienced surgeon by the infrapubic route is surprised at surgeons who oppose this method, because of their repeated insistence that by the abdominal route one can see the structures with which he deals, but cannot see the structures encountered in the vaginal route, for they have neither performed the operation correctly nor seen it correctly performed. Any person who has often operated by both methods will tell you that, with few exceptions, nearly every structure treated from below is brought within view before the knife or the scissors is applied; and even in enucleation of pus-tubes and ovaries, if we first bisect the uterus, the eye can guide the finger as well as by any other method, and the finger can explore to the pelvic brim with its trained sense of touch. Nor will the statement that we must necessarily wound the intestines in infrapubic operations more frequently than in suprapubic operations bear the test of intelligent experience.

I have performed vaginal hysterectomy since 1888, and during the last few years have treated every diseased condition of the pelvis by this method, where indicated, if the consent of the patient could be obtained. During these eleven years I have never wounded the bowel or ureter; but I have wounded the bowel several times in performing abdominal section. I claim no special excellence of technique in avoiding injury to these structures, but contend that every well-trained surgeon can obtain the same degree of perfection in results if he will persist in his efforts.

One thing that may have prevented the more general adoption of the vaginal method, and may have caused the people to oppose it, is the belief that the technique is so complicated that it is difficult to do the work without committing the sins above mentioned. I can understand why this belief exists to a greater extent than otherwise, in that too many surgeons use an unnecessary multiplicity of instruments, and especially of retractors, because these appliances, with few exceptions, are of no practical use, and often complicate the operation.

In my early hysterectomy operations I was prone to adopt the methods of my predecessors without considering whether there might probably be an improved technique in some details.

In many cases in hysterectomy no retractor is needed, and seldom more than one, and by dispensing with them the operation may be done

more rapidly, more successfully, and with less danger of wounding adjacent organs, for the *fingers* are the best *retractors* that can be used. By this method, if we bisect the uterus, there is usually no difficulty in seeing the tissues before the knife or the scissors is applied; but if we cannot the finger may be carried in advance of the cutting instruments, in contact with the uterus or diseased tissues, thereby preventing wounding the bladder, the intestines, or the ureters. I have for several years observed this technique, and the more experience I have the more I feel justified in insisting upon its superiority. Every part of the vaginal wall and the cervix may often be exposed by the fingers and seen as plainly as tissues outside the body.

I can readily see that there may be an objection to vaginal hysterectomy in some instances, and also to dispensing with retractors, if the uterus is not bisected; and just here is an excuse for the opposition urged against vaginal hysterectomy by surgeons who tell us of the **dangers** of wounding vital structures. It is not possible to see all the tissues involved in removing pus-tubes and applying clamps if this is done before the uterus is bisected, because these structures are then high in the pelvis and mainly hidden from view. There is no danger, however, of wounding anything but the uterus during the process of bisection; and after the organ is divided each side may be separately pulled outside the vulva, adhesions treated as they present, and the broad ligament, including the ovaries and tubes, clamped externally from above, in full view. There is no danger of wounding the intestines in separating adhesions from the uterus, for it is exceptional that the bowel is firmly adherent to this organ, and if so, by hugging the uterus closely it is easily separated without danger of structural injury; and omental adhesions are of no consequence.

While I do not believe the uterus is an important organ after the removal of the ovaries and tubes, still there are many cases where it might be well to leave it, or where the patient will not consent to its removal, and her convalescence may not, because of this fact, be interfered with, and she may remain well. In these cases I have had but little difficulty in removing the ovaries and tubes through a vaginal incision into Douglas' pouch, going behind the ureters and the uterine arteries. If the incision is made close to the uterus no vaginal arterial branches will be wounded and the hæmorrhage will be of no consequence, nor will there usually be much trouble in separating adhesions and bringing the ovaries and tubes into the vagina. They can then be removed with almost as much perfection as they can through the abdominal wound.

In this operation retractors are absolutely in the way, and no one can do perfect work of this kind who continues their use. And in this connection we may show the fallacy in the arguments against the infra-pubic method offered by persons who claim it is not conservative, for it is impossible to perform more conservative surgery upon any part of the body, or by any known method, where the operation could in any sense be considered a capital operation.

There is no danger in opening Douglas' pouch after the vagina has been made aseptic, and the uterus likewise, by thorough curettage, etc.; and when the ovaries and tubes are brought into the vagina, if not diseased, they may be returned without injury, but if diseased not enough to justify removal they may be treated by any approved method, returned to their place, and the vaginal incision immediately closed. The operation performed after this fashion is of so little significance that it is not more dangerous than the operation for curetting and for lacerated cervix, and the patient having no elevation of temperature or rapidity of pulse, is able to leave her bed at any time the surgeon will permit her to do so.

If there is doubt as to whether the ovaries and tubes are diseased sufficiently to justify the removal of one or both adnexa, we should first carefully examine these organs through an opening in Douglas' pouch, and if neither should be removed, or if one should be removed only, be governed by the indications.

Nothing more could be accomplished by the suprapubic method, and by that method the abdominal wound in itself should confine the patient to bed for not less than two weeks, and require an abdominal support for one year; and in the vaginal method of exploration there is no danger of hernia or post-operative intestinal adhesions, while there is danger in the abdominal method whether any organs are removed or adhesions separated. This is proven by observation in operations for ventral hernia following cœliotomy, and we are always watchful in our incision to prevent wounding an intestine adherent to the abdominal wound.

Where but one ovary and tube should be removed, let it be as a result of any kind of injury—pyosalpinx, ovarian abscess, tuberculosis, extra-uterine pregnancy, etc.—the other side may serve just as useful purpose as before the operation, and many of these women have afterward borne children without trouble. While there may be a few cases where the operation could not be completed without hysterectomy or abdominal section, I have not met with such a case, and I have not performed a suprapubic operation for extra-uterine pregnancy for nearly

four years, but have performed about thirty through the vagina, each one making an uninterrupted recovery. Where one or both of the adnexa are removed *per vaginam* the convalescence is so universally uninterrupted that we learn to believe that every patient will make a prompt recovery. Of course, it would not be the correct thing to attempt to complete an operation for extra-uterine pregnancy in intraperitonæal rupture with a large accumulation of blood in the abdominal cavity that could not be drained away; but in this condition there are times where vaginal incision into Douglas' pouch, and clamping the tube at the point of rupture may save the life of the woman by promptly controlling hæmorrhage until she can be resuscitated sufficiently to resist the dangers of a cœliotomy. In some of these cases the shock is so great that an abdominal section cannot be performed until the patient rallies, and often just as the pulse begins to become well perceptible secondary bleeding may cause death. A clamp may be applied through the vaginal incision without the administration of chloroform if the patient is not able to take an anæsthetic, and removed at the time of the cœliotomy.

Having first insisted at the meeting in Baltimore that in operations *per vaginam*, where septic matter in the pelvis is held there by an overlayer of intestines agglutinated by inflammatory exudations, that these adhesions should never be disturbed if it can be avoided, and that experience has taught that they usually cause no trouble, I will not dwell specially on that point to-day. Nature is always conservative, and in protecting the abdominal cavity from the poisons in the pelvis she usually does so after a systematic fashion that may cause no trouble if the adherent intestines are not separated, and this protecting roof should not be disturbed, either in vaginal incision or in vaginal hysterectomy. No experienced cœliotomist will contend that it is not dangerous to remove a large accumulation of pus, hemmed in after this fashion, through the abdominal incision, for while it may be sterile in one instance it may be virulent in another, and we never know that we can positively prevent soiling the healthy peritonæum; but if we succeed in separating the adhesions without wounding an intestine or causing local or general sepsis, it is impossible to prevent post-operative irregular adhesions more dangerous to health and life than would have been the agglutinated intestines left undisturbed in an operation *per vaginam*. In cases with extensive accumulation of pus, with tissues thoroughly septic and softened, the patient may symptomatically recover by incision and drainage without the removal of any organs and I have seen many of these cases who afterward complained of no pelvic trouble.

This is applicable in accumulations of pus following abortion or labor ; but in cases of local sepsis at such times the formation of pus may be prevented by prompt vaginal incision, opening the folds of the broad ligament, or separating pelvic adhesions, and lightly packing with iodoform gauze, so as to separate and keep apart the infected surfaces. If these cases could be seen at the beginning of sepsis the results would be good, but unfortunately we are not often called until the disease has made too much headway, and pus has accumulated.

In both vaginal hysterectomy, and in vaginal incision for removal of tubes and ovaries, or for other purposes, we should apply just as little gauze as will meet the demands, being careful to cover the ends of the clamps to protect the intestines against subsequent injury. Too much gauze packing is painful, keeps the vagino-peritonæal opening too widely distended, and does not drain well. But little iodoform gauze should be used, for it has often caused intoxication, and has occasionally caused death.

To insure perfect drainage it is best to place a gum tube in the vagina, with the end in the lower part of the vaginal incision, and against the gauze packing. The tube should be used until after the gauze has been removed, and until the opening between the vagina and peritonæum has closed so as to *positively* resist the passage of water in vaginal irrigation. I do not believe it is best to leave the gauze packing for a week or ten days, as has been done and I remove it gradually, beginning on the third day and taking out the last piece on the fifth or sixth day.

I have never observed that the length of the vagina has been materially altered, or that the secretion has been especially interfered with. If an appendix is sufficiently diseased to justify its removal then the direct symptoms will enable us to make a diagnosis, and guide us in the selection of the best method in operating. The relatively delayed convalescence, the abdominal incision, and the danger of hernia, must be accepted in a minor degree as objections to the suprapubic route, in selecting that method instead of the infrapubic route.

HOUR-GLASS CONSTRICTION OF THE MEMBRANES IN THE FIRST STAGE OF LABOR: A CLINICAL STUDY AND REPORT OF FIVE CASES.*

BY ERVIN A. TUCKER, M.D., NEW YORK.

It is seldom that even a beginner in the practice of obstetrics mistakes the first stage of labor for the second, but occasionally it is not only possible, but even easy for the experienced obstetrician to make this mistake, unless always on the alert to avoid it. The conditions which must be present in order to render such a mistake possible are so uncommon and peculiar that a description and study of them cannot fail to be interesting for theoretical reasons, and instructive from a practical standpoint.

It has been my lot to see five cases in which the phenomena about to be described were present. In the first four a wrong diagnosis of second stage was made at the time of the first examination, whereas really the second stage did not begin till several hours later, but in the fifth case a correct diagnosis was at once made because of the experience gained from having seen the other four. To the best of my knowledge no one has yet reported the observation of such cases. I was not aware that such a condition could exist, till my first case occurred, and it required more experience and opportunities to study the factors present in such cases to enable me to realize the significance of my observations.

An obstetrician examining a woman who gives unmistakable signs of being in labor would ordinarily pronounce her in the second stage, if the examining fingers came upon a bag of waters, so filling the vagina, that the cervix could not be felt; he would naturally infer that the cervix no longer offered any resistance to birth and would rupture the membranes as the next step in the process of delivery. But in the five cases now to be reported, the second stage was simulated, because the unruptured membranes, having been protruded through the partially opened cervix, had become so distended with liquor amnii that the bag of water thus formed filled the vagina. The examining fingers felt, therefore, only the distended membranes. Even a fairly careful examination would, under these circumstances, easily lead to a wrong diagnosis.

The name—hour-glass constriction of the membranes—is selected

* Read before the New York Obstetrical Society, April 11, 1899.

as descriptive of the condition, because the entire bag of waters is divided by the partially dilated cervix into two bags—the uterine and the vaginal, between which there is communication so that fluid can pass more or less readily from one to the other. The upper or uterine bag is usually the larger, but may be of about the same size as the lower or vaginal bag, as in Cases I. and V., where the patients were aborting at six and six and a half months respectively. In still earlier abortions it is reasonable to assume that the vaginal might be even larger than the uterine bag, but such a case has not yet been observed. As the uterus contracts and thereby makes the uterine bag smaller and more tense, the vaginal bag becomes larger and more tense. The maximum tenseness is reached in both bags at the acme of a uterine contraction, but the vaginal bag may remain tense for several minutes after the uterus has relaxed and the uterine bag become soft, as was seen in Case V., which was under observation for over an hour. The prolongation of tenseness in the vaginal bag is apparently due to one, or two, or three, or four factors, acting together or in succession, *viz.*: (1) spasm of the cervix, which lasts after the corpus uteri has relaxed; (2) the angle in the cervix which the uterine makes with the vaginal bag; (3) pressure of the presenting part against the uterine orifice of the constricted portion of the membranes, a pressure which would be especially effective in cases where the uterine tumor is small or the amount of liquor amnii scant, so that the foetus is unable to move freely, and in cases of presentation of the vertex where the head acts as a plug; (4) the anterior lip of the cervix may be pressed by the vaginal bag of waters against the posterior lip, so as to impede more or less the return flow. But sooner or later equilibrium of pressure is re-established in the two bags, only to be disturbed again when the uterus again contracts. This process is repeated until the cervix is fully dilated, if the membranes remain intact. Dilatation of the cervix will necessarily be rather rapid in such cases, because the constricted portion forms a water-wedge which acts to great advantage. Use of the term “hour-glass” is, therefore, not strictly correct, because the vaginal bag is bent at nearly a right angle to the uterine and because the relative sizes of the two bags vary from time to time.

When the membranes are ruptured, there is a sudden gush of all the fluid from the vaginal bag, the cervix is found admitting only one or two fingers, and the remains of the collapsed vaginal bag are felt in the vagina leading up into the cervix. Liquor amnii continues to trickle out, until all, or nearly all, of it has escaped from the uterine bag also. If a wrong diagnosis of second stage leads to a rupture of the

membranes early in the first stage, a dry labor is thus artificially produced, which is of course especially unfortunate in the case of a primipara.

Simulation of the second stage of labor due to constriction of the membranes by the cervix in the first stage must not be confounded with "collapse of the cervix" in the second stage, an event which may occur if the membranes are ruptured artificially during an interval between two pains or if the membranes rupture spontaneously during a pain while the presenting part is still above the pelvic brim, or it may occur in any case in which after full dilatation of the cervix the non-engaged presenting part is still too large to advance at the time when the membranes are ruptured either artificially or spontaneously. The length of time that the cervix can remain in this collapsed condition varies according to the strength of the pains and the relation of the size of the presenting part to the pelvic brim. The very next pain after cervical collapse has occurred may advance the presenting part enough to reestablish full dilatation, or, if the pains are poor and the presenting part must be considerably molded before it can engage, hours may pass before the cervix is again fully dilated. A collapsed cervix offers no obstacle whatever to the advance of the labor. Collapse of the cervix is due solely to failure of the presenting part to descend, a condition which is fairly common, whereas "hour-glass constriction of the membranes" is dependent upon totally different causes and the proper combination of factors to produce it is necessarily rare.

If a vaginal examination is not made until after rupture of the membranes and then the cervix is found admitting two or more fingers while the presenting part is still above the pelvic brim, it might be at the time of this first examination difficult or impossible to say whether this was a case of collapse of the cervix after full dilatation or a case in which "hour-glass constriction of the membranes" had existed, but further observation of the case would certainly decide this point in all, or nearly all, doubtful cases. That the second stage had not begun at the time of the first examination in any of the five cases now to be reported in detail is proved in Cases II. and IV., by the condition of the cervix after rupture of the membranes (*vide* tabulation of the five cases), in Cases I., II., and III., by the size of the os uteri after rupture of the membranes; in Cases I., II., III., and IV., by the difficulty with which the cervix was dilated into second stage; in Cases I., II., and IV., by the length of time that elapsed from rupture of the membranes to the beginning of the second stage, and it was proved in Case V., by actual ex-

amination of the cervix which was found to admit only one finger, though at first it was thought to be fully dilated.

Report of Cases.

Case I.—A primipara, aged 20 years, whose labor began at 4 P.M., was seen at 6.30 P.M. Pregnancy was only six months advanced. Pelvis was found to be a little flattened and the head, though small, was still above pelvic brim. Position was L. O. A. No foetal heart could be heard. Examination per vaginam showed that the second stage had begun—a large pouch of membranes so filled the vagina that the cervix was not to be felt. Pains were strong and frequent. Patient was at once prepared for delivery and the membranes ruptured artificially. The cervix was now found to admit only one, or at the most, two fingers. Pains continued to be good, so that the cervix was sufficiently dilated at 12.15 A.M., to permit birth. After a rather precipitate second stage of only five minutes a macerated foetus was born.

Case II.—This patient, 27 years old, had had four premature and one full-term labors. When first seen, at 5.10 P.M., she had already been in labor since noon. Labor was premature—at eight months. Pelvis was of good size and symmetrical. Position of child was transverse, dorso-anterior, head on the left side. Foetal heart could be distinctly heard a little to the left of the navel. Internal examination revealed the vagina completely filled by a bag of waters, so that the patient was thought to be in the second stage. The membranes suddenly ruptured spontaneously at 5.35 P.M., during a pain. Another vaginal examination was made at once—cervix admitted only two fingers, hand and foot felt presenting. Nothing was done for about two hours, then, as the os still admitted only two fingers, podalic version was performed after cephalic version had been tried and found impracticable. Version was done by the Braxton-Hicks method in preference to forcing the whole hand through the very rigid cervix. Second stage began at 7.35 P.M., but without the version it would not have begun till several hours later. A living child, weighing 4 pounds 4 ounces, was extracted, after the half-breech had dilated the cervix with the aid of good pains and an occasional traction upon the foot.

Case III.—When this patient, a IV. gravida, 29 years old, was first seen, at 3.30 P.M., she had been in labor three hours. Labor was premature. Pelvis was symmetrical and large. Position of foetus was transverse. Foetal heart could be faintly heard. Vaginal examination revealed a bag of waters filling the vagina completely. This bag could

TABLE SHOWING HOUR-GLASS CONSTRICTION OF THE MEMBRANES IN THE FIRST STAGE OF LABOR.

No. of Case.	Gravida.	Age.	Labor Began at	First Examination made at	Membranes Ruptured at	Size of Os Uteri after Rupture.	Condition of Cervix.	Second Stage began at	From Rupture of Membranes to Second Stage.	Birth at	Position. Presentation.	Character of Pains.	Point of Rupture in Membranes.	Kind of Labor, etc.	Cause of Prematurity of Labor.
I.	I.	20	4.00 P.M.	6.30 P.M.	6.40 P.M. artificially.	Admits 2 fingers.	Not noted.	12.15 A.M.	5 hours 35 min.	12.20 A.M.	L. O. A. Head above brim.	Strong and frequent.	Not noted.	Abortion at six months. Macerated fetus.	Death of Fetus. Degeneration of Placenta.
II.	VI.	27	12.00 M.	5.10 P.M.	5.35 P.M. spontaneously.	Admits 2 fingers.	Rather deep bilateral laceration. Very rigid.	7.35 P.M.	2 hours.	7.40 P.M.	Transverse. Hand and Foot.	Infrequent and fairly strong.	Lateral.	Premature at 8 months. Bipolar Version and Extraction.	Unknown. Syphilis suspected.
III.	IV.	29	12.30 P.M.	3.30 P.M.	4.13 P.M. artificially.	Admits 1 finger.	Soft. Medium thick.	4.15 P.M.	Only 2 minutes because of accouchement forcé.	4.18 P.M.	Transverse. Hands and Right Foot.	Infrequent and strong.	Lateral.	Premature at 7½ months. Version and Extraction.	Unknown. Favored by coughing.
IV.	I.	20	9.00 A.M.	11.15 A.M.	11.35 A.M. artificially.	Admits 3 fingers.	Hard. Thick. Perfect.	4.30 P.M.	4 hours 55 min.	I. 4.40 II. 4.55 P.M.	I. L. O. A. II. Vertex and both Feet.	Infrequent and weak.	I. Central. II. Lateral.	Abortion at 6½ months. Twine.	Death of I. Fetus and Degeneration of Placenta.
V.	IX.	41	6.30 A.M.	10.30 A.M.	12.10 P.M. spontaneously	Admits 1 finger.	Soft. Thick. Stellate laceration.	12.10 P.M.	No time, because diagnosis was made and membranes left intact to dilate cervix.	12.35 P.M.	L. S. A. Breech and Feet and Cord.	Strong.	Not noted because badly torn.	Abortion at 6½ months. Macerated fetus.	* Death of Fetus due to Hemorrhages in Placenta.

be seen by separating the labia. Preparations were at once made for delivery. When the membranes were punctured, at 4.13 P.M., about a pint of liquor amnii escaped. Cervix was now found to be soft, medium thick, admitting only one finger. No presentation could be felt with one finger, so two fingers were forced with moderate pressure through the cervix beyond the internal os where they came directly upon small parts—both hands and the right foot. Head of child lay upon left side of mother. This right foot was seized and podalic version accomplished. Traction was then made upon the foot and the child delivered rapidly because of the feebleness of the heart-sounds. Birth occurred at 4.18 P.M., only five minutes after rupture of the membranes, but the child was deeply asphyxiated and died twenty minutes later. It was poorly developed, weighed 3 pounds $4\frac{1}{2}$ ounces, and had advanced to about seven and a half months' utero-gestation. By this forced delivery the cervix was deeply torn on the left and very deeply on the right side. Previous labors of this patient had been at full term. No cause for the prematurity of this labor was discovered, except that the patient had had a bronchitis for two weeks, during which time she often coughed violently.

Case IV.—This primipara, 20 years old, in premature labor, was found to have aortic stenosis and insufficiency. Her pelvis was normal. Labor began at 9 A.M., and she was first seen at 11.15 A.M. Vagina was found to be filled by a bag of waters; the cervix could not be felt and it was therefore supposed to be fully dilated. As soon as the patient could be prepared for delivery, the membranes were punctured, at 11.35 A.M., and then the os was found to be only silver-dollar size, the cervix hard and thick. A vertex in L. O. A. position with both feet in front of the brow could be felt. As labor progressed, the left foot was in some way prevented from descending, but the right foot was born resting against the brow. The cervix was sufficiently dilated at 4.30 P.M., and ten minutes later a small foetus was born in this abnormal attitude. It was then discovered that the uterus contained another foetus in another amniotic cavity; this sack broke spontaneously and at the same instant a small foetus was born, fifteen minutes after the first. Weight of the first, female, was 1 pound 6 ounces; of the second, male, 1 pound $8\frac{1}{2}$ ounces. Pregnancy was about six and a half months advanced. The first foetus was still and its placenta showed marked degeneration; the second lived five hours. Death of the first twin and degeneration of its placenta probably caused labor to begin prematurely.

Case V.—This patient, 41 years old, had had eight full-term chil-

dren. Her labor began at 6.30 A.M., with feeble and infrequent pains. When she was first seen, at 10.30 A.M., her pains had become strong. Pelvis was large and symmetrical. Pregnancy was only six and a half months advanced, as was afterwards made out from an examination of the foetus. Position was L. S. A. No foetal heart was heard. Vagina was found to be filled with a bag of waters, so that the second stage seemed to have begun. The bag could almost be seen at this time (10.30 A.M.) and a little later it protruded from the vulva and lay unruptured between the thighs. Experience with the preceding four cases and the observation that the pains were not of the bearing-down variety caused suspicion that she was not in the second stage. So two fingers were passed carefully up the side of the vagina till they found the cervix, which was thick, soft, slightly lacerated in the stellate form, and admitted only one finger. Fingers were withdrawn and the membranes left intact till the cervix was fully dilated, at 12.10 P.M., when the membranes ruptured spontaneously. Birth of a macerated foetus, weighing 1 pound $\frac{1}{2}$ ounce, occurred twenty-five minutes later. The placenta contained very many small and large white fibrinous nodules on both the foetal and maternal surfaces, showing that repeated hæmorrhages had taken place, which no doubt caused death of the foetus and the subsequent abortion.

From a study of these five cases it would seem that the age of the patient has practically no bearing upon their occurrence, as the ages varied from 20 to 41 years. Neither does the degree of gravidity seem to play an important part, as two patients were primiparæ and three were multiparæ in the fourth, sixth, and ninth pregnancies. But no positive generalization ought to be made from such a small number of observations. It is especially to be noted that all of these cases were premature—three of the five were abortions, and no case was further advanced than eight months. In all five there was a malposition, or a multiple presentation (presentation of more than one foetal part), or a non-engagement of the presenting part, all of which conditions are much more common in premature than in full-term cases. When we come to investigate the factors which must combine to render these cases possible, we shall better understand the principal reasons for their prematurity. And yet there seems to be no valid reason why "hour-glass constriction of the membranes" might not occur in a labor at full term. It is easy to imagine that such full-term cases do occur now and then, but that their real nature is not discovered, because, after the wrong diagnosis of second stage has been established, another examination is not made for some time, during which the cervix may complete dilata-

tion, or the membranes rupture and this destroys further opportunities for investigation, or these full-term cases might be easily overlooked, because no careful examination is made *immediately* after the membranes rupture or because they are mistaken for cases of "collapse of the cervix."

The frequency of "hour-glass constriction of the membranes" is difficult to estimate. The five cases reported have been the only ones observed in 3000 consecutive confinements, of which 50 were abortions (labors before seven-months' gestation) and 350 more or less premature labors. The apparent frequency, therefore, might be regarded as 5 in 400, or 1 in 80, if we consider only the premature labors, but, if we assume that this phenomenon may occur also in full-term labors under favoring circumstances, the frequency must be changed to 5 in 3000, or 1 in 600. No doubt cases of this kind really occur much oftener than we suppose. There are so many chances for the membranes to rupture spontaneously before an examination has been made and the diagnosis established that it is not at all surprising that these cases should occur without arousing even a suspicion that they had existed. In Case II., for example, if the vaginal examination had been made a half-hour later, no one would have supposed this to have been a case of "hour-glass constriction of the membranes."

Further consideration of these five cases shows that six factors were uniformly present and that without the existence of all these factors in every case the phenomenon could not have been produced:

- I. *Partially opened cervix.*—Labor must begin and the cervix must be more or less dilated before "constriction of the membranes" can be established. No case was seen earlier than $2\frac{1}{4}$ hours after real labor pains had begun; in this case (No. IV.) the cervix was about silver-dollar size, when the wrong diagnosis of second stage was made. In the other four cases the cervix had dilated enough to admit one or two fingers. How long the membranes had been constricted before the real nature of the case was discovered it is, of course, impossible to say, but probably only a little while. The smaller the os uteri, the less easily can the vaginal bag of waters be formed. Therefore, when a cervix is found to have a dilatation of only one finger and yet the vaginal bag is already completed, its formation must have been very recent. On the other hand, the larger the os uteri, the more easily is the vaginal bag of waters formed, and the greater the degree of cervical dilatation found when the diagnosis of "constriction of the membranes" is made, the longer this condition has probably existed. Membranes can without doubt be constricted by the cervix from the

time when the os is dollar size up to the time of the complete dilatation which marks the beginning of the second stage, though no actual observation has yet been made of constricted membranes with all the degrees of cervical dilatation which is implied by this statement.

2. *Resistance*.—Unless the cervix offers resistance, a constriction of the entire bag of waters into two smaller bags cannot be made. The degree of resistance caused by the cervix varies greatly. In the four cases, where "condition of the cervix" was noted, it was rigid in two and in the other two, although soft, it was thick enough to offer considerable resistance. That all five of the cases were premature implies that the cervix was firmer and, therefore, more resistant to dilating forces than the same cervix would have been, had the case gone to full term, and this is equally true of primiparæ and multiparæ. The rule is that the more premature the labor, the more resistant is the cervix, in spite of the facts that occasionally we find a primipara with the cervix rigid, though at full term, and that a multipara at full term may have a hard cervix because it is the seat of many cicatrices. The factors, which influence the length of time which must elapse before constriction of the membranes can be fully established, are (1) the condition of the cervix when labor begins, (2) character of the labor pains, (3) the number of previous labors, (4) the period of gestation attained when labor supervenes. In the observed cases it is to be noted that the two primiparæ (Cases IV. and I.) required the shortest times to establish "hour-glass constriction"— $2\frac{1}{4}$ and $2\frac{1}{2}$ hours elapsed from the beginning of labor till the constriction was discovered, while the multiparæ required in Case III., 3 hours, in Case V., four hours, and in Case II., $5\frac{1}{8}$ hours to accomplish the same result. The character of the labor pains has a more direct bearing than any other one factor upon the length of time that the cervical constriction can continue; the stronger the uterine contractions, the sooner is the resistance of the cervix overcome; but this law may be modified by other conditions, such as abnormal position of the foetus which prevents advance of the presenting part, the presence of twins in utero, hydramnios, etc. When, finally, resistance disappears, as it must when the cervix is fully dilated, constriction of the membranes also ceases to exist.

3. *Non-engagement of the presenting part*.—In all five cases the presenting part, though different in every case, failed for some reason to fit into the pelvic brim tightly enough to prevent liquor amnii from passing freely down into that part of the bag of waters which lay at first in front of the presenting part and which protruded later through the cervix and became the vaginal bag. Whether the fluid can pass

freely back into the uterine bag would seem to make no difference in the final result, though failure of the fluid to return into the uterus after each pain must hasten completion of the vaginal bag. As all these labors were premature, it is not strange that the presenting part failed to engage. In Case I., the only case in which the presentation was normal, the head was so small and soft that, even if it had engaged in the pelvic brim, it could not have prevented free passage of the liquor amnii. In Cases II. and III., the position was transverse—a most favorable position for the passage of fluid; the presentation of a hand and foot in Case II., and of both hands and a foot in Case III., would only favor still more a free flow of the liquor amnii. In Case IV., the presentation of both feet at first and of one foot afterwards with the head favored escape of the fluid into the lower bag. In Case V., there was so much room that the funis prolapsed and presented with the breech and feet.

4. *Separation of the chorion.*—Unless the chorion becomes detached from the lower uterine zone, extension of the membranes through the cervix to form the vaginal bag could not take place, even if all the other conditions were favorable. Just how far up from the internal os the chorion becomes detached from the uterine wall it is impossible to say and it no doubt varies in every case. That this detachment, not only of a part of the chorion but of the entire chorion and placenta also, can occur has been repeatedly observed in premature births. A detachment of the chorion from the lower zone of the uterus is also often seen in full-term cases in labor. By “separation of the chorion” from the uterus we really mean a separation of the chorion from the decidua vera, or, if the decidua still adheres to the chorion, a separation of the decidua vera from the uterine muscle or a forcible tearing apart of the decidua itself, unless pregnancy has advanced so far that degeneration of the decidua has occurred sufficiently to make the separation natural and easy. As none of the cases observed were more than eight months advanced, and three of them were nearer six months than eight, degeneration of the decidua, which is not complete till full term, could not have been far enough advanced to make the separation easy, so we must conclude that the separation of the chorion was mostly or wholly due to the power of the uterine contractions.

A placenta implanted at or near the fundus would most favor extension into the vagina of the bag of waters when the chorion is separated from the uterus, *i. e.*, the further the placenta from the os. internum, the more apt would be the membranes to extend into the vagina. In the three cases where the point of rupture in the mem-

branes was noted it was lateral in two and central in one (Case IV.), showing that the placenta was implanted well away from the internal os.

5. *Tough membranes.*—Unless the membranes are strong enough to resist rupture in spite of uterine contractions of considerable severity until the vagina is completely filled by a bag of waters, “hour-glass constriction of the membranes” cannot be established. Evidently the chorion has to withstand most of the strain which every uterine contraction produces, for the amnion is too weak to offer much resistance, though by its intimate contact with the chorion it would undoubtedly lend some additional strength. While these membranes could offer only slight resistance to the sudden advance of a solid body, it is possible for them to offer great resistance to the slowly increasing pressure exerted by a fluid medium. In Case II., the membranes were strong enough to resist rupture for about $5\frac{1}{2}$ hours after labor began, but only for 25 minutes more after the vaginal bag had completely formed; in reference to the latter part of this statement, however, we must remember that the vaginal bag may have already been in existence for some time before the first examination was made. It is difficult to obtain accurate figures about the comparative tenacity of membranes, but Case V., furnishes fairly exact information, *viz.*: that the membranes remained intact $1\frac{2}{3}$ hours after the vaginal bag was known to be completely formed. That the membranes in Case V., were unusually tough is shown by the fact that even after strong pains had forced the vaginal bag out of the vulva, so that it lay between the patient's thighs, it still resisted rupture for some time. That the membranes also possess a little elasticity is a well-known fact, but this property is not developed enough to assume importance. As these labors were premature, the membranes were undoubtedly tougher than they would have been at full term, though occasionally we do see full-term cases in which it is difficult to break the membranes. As pregnancy advances, the chorion over and near the internal os becomes thinner and weaker in a fairly large number of cases; these are mostly cases in which cervical endometritis is present, especially if this endometritis is due to gonorrhœa.* Such cases almost without exception end as dry labors. The occurrence of “hour-glass constriction of the membranes” makes it possible, therefore to state with a great degree of probability that the cervix is not a seat of inflammation.

6. *Uterine contractions.*—As has already been stated, labor must

* A cervical endometritis, especially the gonorrhœal variety, may lead to softening, maceration, erosion, and destruction of the membranes.—*Trans. Winckel's Lehrbuch der Geburtshülfe*, page 39.

have advanced far enough to have partially dilated the cervix and some separation of the chorion from around the internal os must have taken place, before the pains begin to be effectual in forming the vaginal bag. Then the uterus, every time that it contracts, acts like a bulb-syringe in forcing the liquor amnii through the cervix into the vaginal bag, which increases in size with every pain, till the maximum distension of the vagina by this bag is reached. Vaginal pressure, which favors return of the fluid into the uterus, is thus gradually overcome. To accomplish this considerable force is required even in the easiest case. Reference to the cases shows that in all of them the pains were strong, except in Case IV., where the pains were noted as weak, but even in this case the pains must have been stronger than they appeared to be, as is proved by the fact that they dilated the hard cervix of a primipara, pregnant with twins, so that the os was silver-dollar size when labor had been in progress only 2 hours and 35 minutes.

Though these six factors have been studied separately, as if each were the only factor acting at a given time, yet we must remember that in an actual case under observation all the factors are working together to produce the results already described.

The diagnosis of "constriction of the membranes in the first stage of labor" ought to be made with certainty, if we are only aware that such a condition is possible. If the diagnosis of second stage of labor with intact membranes is made from the vaginal examination, but the patient has none of the bearing-down and expulsive pains which are so characteristic of the second stage, suspicion ought to be aroused, and then this suspicion verified or dissipated by passing the examining fingers slowly up the side of the vagina till the edge of the cervix is felt and thus the exact nature of the case revealed. It is best to introduce the fingers during an interval between two pains, so as not to run any risk of rupturing the membranes, and to feel for that edge of the cervix which is towards the palm of the examining hand, *i. e.*, if the examination is being made with the right hand, it is easier to feel for the right side of the cervix. If a pain comes on while the fingers are in the vagina, firm pressure of the straightened-out fingers against the vaginal wall, till the pain passes, will probably save the membranes from rupture. If the second stage has really begun, it is usually easy to reach the edge of the cervix, but if the cervix is only partially open, it may be difficult to reach high enough to find it. When a case is found with enough loose ruptured membranes in the vagina to form a bag and the cervix, admitting only one or two fingers, is firm or thick, very likely this *was* a case of "hour-glass constriction of the membranes," but the

membranes have ruptured spontaneously before the examination was made; all the more probable in this diagnosis, if the labor is premature and the presenting part not engaged.

If a correct diagnosis of "hour-glass constriction" is made and thereby a too-early rupture of the membranes avoided, the bad results which are so often seen in dry labors are prevented. On the other hand, if a wrong diagnosis is made and the membranes ruptured, some or all of the evil effects of a dry labor are very likely to appear, and these evil effects will be greater, the less the cervix is dilated when the membranes are ruptured. This point is of special importance in the case of a primipara. Leaving the membranes intact in the first stage not only hastens full dilatation of the cervix with much less danger of its deep laceration, but also increases the probability in vertex presentations that the child will be born alive, because its head does not have to act as a dilator of the cervix, a necessity in a dry labor which may easily result in death, especially if the child is premature.

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EDITORIAL.

THE AMERICAN MEDICAL ASSOCIATION.

It was our good fortune to be present at Columbus, Ohio, at the time of meeting this year of this Association. We are much impressed with its great and talented membership. But more forcibly than the thought of its actual strength came the thought of what it might be and was not. One missed from its membership the names and faces of many of the most prominent and honored men in the profession. The American Medical Association should be, as its name implies, a society embracing all medical men in this country. Yet it is not and can never truly be even representative, while it excludes from its membership a large proportion of the physicians and surgeons of New York State, whose contributions to our science have made them throughout the world the glory and honor of American medicine.

It is surely an anomalous and absurd position when members of the Association willingly meet these New York men in consultation and in other societies on terms of honor and absolute ethical equality and yet exclude them from the Association itself on the ground that they are *not* ethical. It seems strange to-day, when so many of the men are dead who, in the passing generation fought the old fight about the code with so much personal rancor, that the Association, to the majority perhaps of whose members the "old code and no code" shibboleth is now hardly a tradition, should not see the wisdom and im-

portance of an effort to bring back within its fold those former members and their professional descendants whose professional influence and reputation are second to no others in this country.

Where is the need of this issue to-day? Does any man consort and consult with homœopaths because he is not oath-bound by a code? Are the members of the Association deterred from the same folly only because they are bound by a code? And, finally, have the homœopaths and all the other irregular systems of medicine ceased to increase because so many physicians in this country insist upon the maintainance of a code whose stringency was avowedly adopted for their extinction? On the contrary, have not all these irregular systems multiplied and flourished exceedingly since the adoption of the code?

We fail to find any other results of the fight which the Association forced so many years ago except that its effect against homœopathy has been absolutely innocuous, that it has driven out and kept out a very large proportion of the most prominent men in this country, who are honored members of all other societies here and abroad, and that the Association from this cause has crippled itself and, instead of being truly *the* American Association (as the British Medical is in England), with the power and authority to represent and to guide the policy of the whole profession, it is merely a very big society recognized only by its large but limited membership.

We ourself were too young to have participated in the grand old row but, in the interests of harmony and union of the profession, for which we are ever striving, we cannot fail to realize how sad a thing it is that such a mighty force for the unification of the whole profession, as the Association could become, should be sectional and of limited influence. It seems to us so senseless and worse that the profession should remain divided because of an old issue (long since dead so far as its practical importance or urgency is concerned), a feud started first in bitter personalities, a division still maintained apparently for the sole reason that it exists.

We personally have no feeling in the matter and would without hesitation subscribe to the code which the Associations forces upon all members. We would do this because as an intelligent, honorable man we could not conscientiously practice in any other way but in that which the code prescribes. And, for the same reason, we believe the code to be utterly unnecessary for all honest men and as absolutely ineffective for the control of dishonest practitioners.

By the efforts of those in and out of the Association who have the interests of a united profession at heart, it should not be difficult to

bring back into one universal association of medical men all those who were so sadly divided by the moribund old code question. As the Code men and No-code men practice exactly on the same ethical lines to-day, their principles being identical, and as the code has apparently had no effect whatever upon homœopaths, against whom it was directed, is it not reasonable that a sincere and strenuous effort should be made to effect a compromise which will heal this breach which stands as a startling evidence of the weakness of the profession and is an effectual bar to regeneration and corporate union?

SOME CORRESPONDENCE WITH DR. MUNDÉ.

In the June issue of this JOURNAL we called our readers' attention to an abuse becoming daily more prevalent, viz., the attempt to cloak voluntary ignorance or incapacity by oracular statements, concerning various gynæcological operations, in which the meritorious, successful and well-known work of other men was wilfully ignored or misrepresented. Although our editorial, as we explicitly stated, had its chief end in an application to the abuse in general, we took for our text some recent utterances of Dr. Paul F. Mundé of this city, who had already been taken to task before for a similar and particularly flagrant misuse of his opportunities.

On the day of publication of the editorial in question we ordered a marked copy containing it to be sent Dr. Mundé that he might see what we had written, at once and at first hand, and that he might have an immediate opportunity to reply to our specific charge, by way of defence or repudiation, either in our columns (which were open to him) or elsewhere. Dr. Mundé has not attempted, perhaps wisely, to make any reply—and we recall the fact that he finally evaded Dr. McLaren's specific and severe charges, to which we referred in our last editorial, after an attempted reply—but in lieu of this the following personal correspondence has taken place. We thank Dr. Mundé for giving us permission as he does in the last line of his last communication, to publish this private correspondence, because we feel that this growing habit among us, in its general application, is so shameful and so prejudicial to the advance of scientific knowledge, that it cannot be too strongly impressed upon the attention of the profession.

We do not think it necessary to make any comment upon this

correspondence; Dr. Mundé has unwittingly furnished it himself in abundance. We append it *verbatim* and *seriatim*.

Our first communication from Dr. Mundé consisted of the following, without name or address and written upon both sides of his visiting card:

"Many thanks for the gentlemanly, polite and able editorial in June No. of the AM. OB. & GYN. JOUR., so kindly mailed me. The attack is quite uncalled for and is an evidence of stupidity & malignity, or of senility, and will be so accepted by all fair-minded persons. As such it fails in its object and excites only pity and contempt. For Dr. Thos. Addis Emmet I have always had the highest respect & veneration; for the writer of the editorial I have only contempt."

In reply to the above we sent the following letter, type-written:

THE AMERICAN GYNECOLOGICAL AND OBSTETRICAL JOURNAL,

1 Madison Avenue, New York, June 28th, 1899.

MY DEAR DOCTOR MUNDÉ,

I have been absent from town for the past four or five days but take this delayed opportunity to answer your foolish and rather undignified note. I say foolish, because calm reflection must have shown you that both your contempt and your love are equally valueless to me.

Speaking of contempt, I know nothing more contemptible than the trick of hiding one's voluntary ignorance and incapacity by ignoring or deliberately misrepresenting the splendid work of great men.

I take too serious a view of the value of scientific truth to be patient with those who pervert it or treat it lightly, even when this is done more in an indifferent and frivolous than in an intentional spirit.

Your self-love has evidently induced you to believe that you played a more important part in my Editorial than is really the case. Had your remarks been made under other circumstances and in other surroundings I agree with you that my "attack" upon you would have been "uncalled for"—nay more, it would have been an extravagant waste of good material. But unfortunately your offense—an outrageous one—has become so common an effect of small-minded ambition especially among the younger growth of gynæcologists—and your indiscretion in choosing for your audience The Woman's Hospital Society, which has a certain authority owing to its connection with Dr. Emmet and others, was so great—that the matter assumed an importance essentially extraneous to your personal connection therewith.

Really, your personality affected me very little, though you served as my text as your offense merited. Nor was my Editorial merely in defence of Dr. Emmet's work. It was a much broader exposure of an unworthy practice and fitted and was intended to fit, in its application, the great and meritorious work of all gynæcologists as well as the offenses of others similar to that for which I took you to task.

I hope this addendum will give you a clearer comprehension of the full spirit of my Editorial.

Very truly yours,
J. D. EMMET.

On the blank leaf of this letter Dr. Mundé wrote, without date or address, the following:

"Letter returned. No use for such trash. No further communications from this source desired; will be returned unopened. For some years J. Duncan Emmet has been known by those who enjoyed (sic) the privilege of his acquaintance to be a silly, conceited boy, whose only stock in trade was blowing his illustrious father's horn, who surely did not need it. It was fondly assumed that he might have inherited the instincts of a gentleman; but his editorial and this letter, which rival each other in asininity and impudence, show this to be a mistake. Hence nothing said or done by J. D. must be taken seriously, and has no value whatever in the eyes of sensible people. J. D. is a non-entity, whose honored name unfortunately may lead people who do not know him to attach weight to his utterances. J. D. is not worth the consideration or the contempt of a gentleman and a sensible man.

Any body can throw dirt, but it is easily brushed away, and the act of throwing casts odium only on the thrower.

Sap. sat.

P. F. M.

P. S. It is to be regretted that the friendship of a lifetime be broken for *no cause whatever* by a silly boy, who fancies he must defend his father's reputation, which no one dreams of assailing.

There is no objection to the publication of this *letter with my addendum.*

P. F. M."

THE INTERNATIONAL PERIODICAL CONGRESS OF GYNÆCOLOGY AND OBSTETRICS.

In the prospectus of this Congress, already published, the name of Dr. Howard A. Kelly appears as a representative of this country to open the discussion.

As, however, we have been informed by Dr. Kelly that it is not his intention to be present at this Congress this year, it has become necessary to select some other representative gynæcologist who may equally well fill this honorable position.

As the time is short, the American Secretary of this Congress, after consultation with some other members, has suggested to the General Secretary the name of Dr. James M. Baldy, of Philadelphia, in whose hands the matter of worthily representing American gynæcology may be safely left. Dr. Baldy is an accredited representative from the United States Government to the Congress.

REVIEW.

The Abdominal Brain and Automatic Visceral Ganglia. By BYRON ROBINSON, B.S., M.D. The Clinic Publishing Co. Chicago.

The present volume contains the author's views concerning the anatomy, physiology and pathology of the abdominal brain, otherwise known as the solar plexus, and its automatic visceral ganglia.

The study of the reflexes or refined disturbances constitutes a most important portion of the work. By this study the author shows the extensive utility and dominating influence of the abdominal sympathetic nerves upon the animal economy.

By most interesting discussions he shows that the abdominal brain, which presides over nutrition and visceral rhythm, is of almost equal importance to the cranial brain, the instrument of mental progress and physical protection.

The author states that all viscera have a rhythm. The abdominal brain is the great nerve center of the abdominal viscera and, perhaps, of the thoracic viscera as well, and it is the cause of the visceral rhythm. Each viscus has its own automatic peripheral ganglia or plexuses in the organ and the duration of the rhythm of each viscus is determined by the mechanism of the automatic ganglia situated in the organ.

The ganglia that automatically regulate the menstrual function are located in the uterus and Fallopian tubes. His observations on this subject merit careful study.

After reading this book the explanation of the train of symptoms following pelvic disease, such as indigestion, malnutrition, anæmia, neuroses, etc., seems simple.

In addition to the interesting reading and food for thought found in this book one cannot but commend the industry and admire the love of scientific research shown by the author. Few practitioners in this eminently commercial age have devoted so much time and labor to original study.

A careful perusal of this book will well repay all medical men.

X. Y. Z.

TRANSACTIONS OF THE PHILADELPHIA OBSTETRICAL SOCIETY.

Stated Meeting, May 4th, 1899.

The *President*, CHARLES P. NOBLE, M.D., in the Chair.*Ætiology of Eclampsia and the Diagnosis of Impending Eclampsia.*

BY EDWARD P. DAVIS, M.D.

(See page 1.)

DISCUSSION.

Dr. G. M. BOYD: I have been particularly impressed with the importance which Dr. Davis has laid upon the frequent urinary analyses in pregnancy and attention to the other emunctories, and particularly that which should be given to the constipation of pregnancy. There is no doubt but what this in addition to the diet and prescribed treatment would modify albuminuria and not too much importance can be laid upon the value of the use of laxatives, particularly, in my opinion, of the saline character throughout pregnancy. I am sorry not to have heard the other papers upon the preventive and medical treatment of eclampsia. It seems to me that the greatest factor in the treatment of this disease is in its prevention by a careful study of the pregnant patient by frequent urinalyses, exercise and diet. Possibly we can do more in averting the disease than in the treatment of it when we meet with its existence. I believe it is probably due to a toxæmia. The toxæmic condition of the blood does not seem to explain all cases, and as the ætiology of the disease is still obscure it would seem to me that the treatment must still remain obscure. We find some favoring blood-letting; others, the use of morphia; some chloral and bromides, and innumerable remedies, and it seems to me the long list is explained by the fact that we do not yet know the cause or the many causes of the disease.

I would like to repeat my statements made at the last meeting of the Obstetrical Society in regard to the value of manual dilatation of the cervix and rapid emptying of the uterus as a treatment of this

disease. I have tested the value of this course, and, given a case of eclampsia developing during labor, I think the wisest course is to empty the uterus. This can be readily accomplished by rapid dilatation after the Harris method followed by the use of the forceps or version. In my hands the results of this course have been pleasing and in no case has a patient developed a fit after the uterus was emptied. With my personal experience in manual dilatation of the cervix and rapid delivery I feel that at all events we have in a certain group of eclampsia cases one course of treatment which is of value.

Dr. A. M. FULLERTON: There can be no doubt in the mind of those having the opportunity to see many cases of eclampsia, concerning the existence of toxæmia as a factor in its production; which, in its turn, the result of improper elimination.

Torpidity of the liver, the digestive troubles to which it gives rise and the accompanying condition of constipation have in our experience been present as predisposing causes in a large proportion of our cases at the Woman's Hospital.

It is the practice with us to make a weekly examination of the urine of every pregnant patient and when any abnormal condition is found to make a *daily* examination. Where torpidity of the liver exists, whether accompanied by any abnormal condition of the urine or not, the use of phosphate of sodium in small doses, given continuously two or three times a day, has produced very satisfactory results. The management of the diet is also an important consideration.

The action of the skin is promoted by daily warm baths.

With regard to the management of eclampsia during the acute attack, I have always felt that I owed much to the opportunity offered me early in my career as a physician, of seeing the methods advocated by Dr. Carl Biens carried out under his immediate supervision in the obstetric wards of the hospital at Vienna.

The routine treatment was as follows: the placing of the patient in a warm tub-bath in which she was kept immersed for about twenty minutes to half an hour. On being removed from the bath enveloped in a wet blanket, she was placed in bed, covered by warm blankets and a rubber blanket and allowed to perspire for about two hours.. These baths were repeated at stated intervals as called for by the severity of the convulsions. During a convulsive seizure chloroform was used as an anæsthetic to relax the spasm, its effect being prolonged by the use of morphia given hypodermatically if the kidneys were acting well.

Chloral combined with bromide was given in large doses per rectum. No effort was made to induce labor; frequently, however, it was found

that as a result of the convulsive seizure dilatation was brought about and the patient thus prepared for immediate delivery. During the intervals between the convulsions, if able to swallow the patient was given concentrated doses of salines.

The above treatment represents my usual practice in these cases.

I have not used *veratrum viride*, so highly lauded by some. It has been used by members of our staff, but so far as our experience goes, it has not been very satisfactory, being too depressant.

With regard to the induction of labor, I think it is undoubtedly true that it is always better to have the uterus emptied, if possible, by hastening the delivery. I have found efforts at manual dilatation to be too initiating to the nervous system unless accomplished under the effect of an anæsthetic.

In a comparatively recent case occurring in my private practice when convulsions occurred during the eighth month of pregnancy and before the onset of labor. I found, after a severe convulsion, that the os uteri was dilated sufficiently to admit two fingers. The patient being under the effect of chloroform, I made deep lateral incisions into the cervix and delivered the child with forceps. I allowed free bleeding as the patient was very plethoric and there was a history of apoplexy in the family. The attempt I had made earlier to bleed her by opening a vein in the arm had been unsuccessful, as the blood would not flow. No convulsions followed the delivery and both mother and child survived and did well. For the first three days following its birth the child suffered from convulsions, showing that it had been profoundly affected by the poison.

A primary trachelorrhaphy and perinæorrhaphy was done which resulted in good union I think Dührssen's plan of incising the cervix a better method of aiding the delivery than the employment of manual dilatation.

Dr. REYNOLDS WILSON: I was very glad to hear Dr. Fullerton's remarks upon the use of morphia, stating that she gave morphia with the idea of prolonging the effect of the anæsthetic. I think that if we study eclampsia cases carefully we find that the reflex connection between the uterus and the nervous system is so intimate that our treatment can rightly be directed toward alleviating this reflex irritability. I have several times seen primiparous women thrown into an eclamptic stage as the head passes through the os. In addition to this the fact that the emptying of the uterus seems to be perhaps the best mechanical means of treating eclampsia shows that act reduces in all probability the irritability of the reflex connection be-

tween the uterus and the nervous system. For that reason I think morphia, except in primiparous women who have given early history of nephritis, is to be highly recommended. I remember a case of a woman brought into the Lying-in-Charity three or four years ago in which morphia was given because the resident physician was unable to bring the case from her home because she was so constantly in convulsions. She had, I think, 13 convulsions within a few hours before entering the hospital. She was given half a grain of morphia and the eclamptic condition reduced. The morphia was continued with the most beneficial results.

There are two drugs which I believe useful in the treatment of developed eclampsia. In the first place, chloral in large doses given by the rectum has the effect of quieting the nervous system and has a distinctly diuretic effect. I have frequently seen it produce a free diuresis. Therefore, it is useful in these two respects, and I should say it was the sheet anchor in the treatment of the seizures, especially in the latter respect, as eclampsia is best treated by elimination. In the next place, I believe calomel is a very useful drug. There is a certain stage in eclampsia where calomel can be given with great good. Its diuretic effect is also marked.

I was greatly interested to hear Dr. Davis' remarks in connection with the hepatic involvement in eclampsia, and in all probability the beneficial effects of calomel are partly due to the effects upon the liver. I believe much good can be accomplished by the use of chloral to control the seizures, and calomel given in large doses every two hours to ward off the after comatose condition which seems to be present with the cessation of normal secretions. I once saw a case of embolic hemiplegia complicated by chronic nephritis in which I started the calomel and, owing to some mistake, the doses were continued until the patient had taken 52 grains, but much to her good. I really think, from what experience I have had, that the members of the Society would find it greatly to their interest to place a little more faith in calomel in the secondary treatment of eclampsia.

I believe in blood-letting and also in inducing labor in the later months of pregnancy at the time when eclampsia is actively developed. It is all very well to outline this treatment, and it sounds easy to pronounce what ought to be done. There are, I know, conditions of eclampsia beyond our treatment; one is the condition in which the patient has sunk into a comatose condition. We can do nothing unless we are able to stimulate the organs of elimination, and I believe much harm can be done in this stage by giving pylocarpin or veratrum viride,

because this stage is one of depression irrespective of what the heart's action may be.

Dr. DANIEL LONGAKER: It will, of course, be a long time before we are in position to say the last word on this subject. In looking over the literature of eclampsia I have been impressed by the large number of contradictory statements on the various phases of the subject, particularly with regard to the treatment. (On the ætiology there is unanimity.) For instance, with reference to the use of *veratrum viride*; one man recently condemned this drug in the most unmeasured language, pronouncing it unreliable, and not to be used under any circumstances. The majority of those who have used the drug speak of it in favorable terms. My own somewhat limited experience inclines me to look upon it as one of the most valuable means of controlling the convulsions.

The history of this drug is somewhat interesting. It goes back to 1858, when Dr. Baker, a Southern practitioner, successfully employed it in a post-partum case. Some years later Dr. Fearn of Brooklyn, used this drug with results not altogether bad. His plan was, of course, somewhat primitive. He says that if the patient is in a convulsion he would give a teaspoonful dose, and if there was no effect in five minutes he would give a second teaspoonful, continuing in this way until the convulsions were arrested. The amount given was often enormous, while that absorbed was uncertain. The best champion of this treatment is Jewett, who reported a number of cases some years ago with very gratifying results. All of these are reported in the "Transactions of the American Gynecological Association for 1897." In every case but one, in which the drug was used, the arrest of the convulsions was very prompt; in the exception the case was practically moribund before the treatment began. According to the modern method of using this drug, very much more definite results may be expected. Jewett's plan is to administer from 10 to 20 minims of the fluid extract hypodermatically.

Even by this method a half-hour is required for the full effect of the dose to be manifested, and the dose is not repeated oftener. Dr. Potter has condemned this drug in unqualified language as dangerous, and yet one case is reported in which 400 minims of fluid extract of *veratrum viride* were used hypodermically during the first six hours and the drug continued for a number of hours in diminishing doses. I, myself, have made a few physiological experiments with this drug, and I think to get a prompt result one must inject about 10 minims of the normal liquid, as prepared by Parke Davis & Co. The first effect is increase of

the salivary secretion, then follow nausea, vomiting, and purgation. My use of the drug in eclampsia has not been extensive. In severe eclampsia occurring intra-partum, fifteen minims produced permanent arrest of the convulsions. The labor in that case was unexpectedly short in its duration. Chloral should be given with a good deal of caution or not at all. If veratrum viride is to be used it should be used alone.

With regard to the subject of induction of labor when the convulsions occur before labor, there are great differences of opinion as to the proper course. My own plan is to treat the eclamptic condition first, and let the results determine the future course to be adopted. In convulsions occurring intra-partum, if labor is almost over, the parts dilatable, I think there certainly can be no objection urged against a speedy termination as possible. While convulsions do occur post-partum, yet the mortality of these cases is less than those which occur during or before labor.

On the subject of accouchement forcé, if we accept such reports as come from the Leipzig clinic, it is the only proper method. And yet, when we get the details of these cases, the picture is not such a gratifying one; for instance, in a series of eighteen, the reporter says, two-thirds had very alarming hæmorrhages, which were only controlled by packing the utero-vaginal canal with aseptic gauze; and half of the cases were infected, although this was limited to the endometrium.

The Preventive Treatment of Puerperal Eclampsia.

BY RICHARD C. NORRIS, M.D.

(See page 7.)

DISCUSSION.

DR. E. P. DAVIS: In the treatment of eclampsia we find an illustration of the fact that our knowledge in pathology is far in advance of that regarding treatment. Much of the confusion which exists in the discussion of the treatment of eclampsia arises from the fact that many proceed upon empirical or traditional grounds, neglecting the indications afforded by pathology. The majority of evidence being in favor of toxæmia as the cause of eclampsia, the successful treatment of this condition should make eclampsia very rare. This is proven in the one practice of those who intelligently study these cases. Up to the present time, in my experience, no case of eclampsia has arisen in a private or

hospital patient who has been under observation sufficiently long to give opportunity for diagnosing and treating toxæmia. The cases which I see are consultation cases and emergency cases brought by ambulance or patrol wagon to the Jefferson Maternity in a most serious condition.

I have given a faithful trial to all reported methods in the treatment of eclampsia, and for the last two years have turned attention especially to securing the most prompt and thorough elimination, and with the best results. The patient, on admission is at once placed in a hot pack and chloroform is used to control the convulsions. If the pulse is full and bounding, 10 minims of fluid extract of veratrum viride is injected hypodermatically. A rectal tube is passed as high as possible into the bowel and as much normal salt solution at a temperature of 110° F., as can possibly be made to enter is introduced into the bowel. The patient's stomach is washed out with the same solution and 5 gr. of calomel and 10 of sodium bicarbonate are introduced into the stomach through the tube when the washing is completed. The injection of normal saline fluid is also practised beneath the skin by hypodermoclysis. This treatment is kept up for over one hour, at the expiration of which the patient is rubbed with alcohol, the pack removed, and wrapped in blankets. A vaginal examination is then made and if labor has begun, measures are taken to expediate it. If a patient is admitted with strong labor pains, she is at once delivered if possible, but if labor is not actively proceeding, no effort is made at first to induce it.

The eliminative treatment described is repeated in a half-hour if necessary. It is believed that time is an important element in deciding the fate of these patients and that prompt elimination is an absolute necessity.

For the interests of the child, prompt delivery is advisable when labor has begun. The foetus suffers from the same poison which threatens the mother and may die with convulsions after delivery.

In the treatment of toxæmia, small doses of calomel and soda frequently repeated are most efficient. Lavage of the intestine with salt solution, the use of the warm bath, the ingestion of large amounts of water, a carefully selected diet and close attention to the details of hygiene are most successful with these patients. Some who do not take a mercurial well are benefited by the compound colocynth pill taken at night.

In view of what has been accomplished in pathological diagnosis, it seems reasonable to hope that we may at some time have a serum test

indicating the degree of toxæmia present as we now have the Widal test for the typhoid condition.

Dr. DOWNS: I would like to ask Drs. Davis and Norris if they have made any study of the temperature of eclampsia patients. In December I had a patient admitted to the wards of St. Mary's Hospital five-months' pregnant. There was some albumin in the urine. The woman went into convulsions and was delivered naturally without any assistance. Immediately after delivery the temperature descended to 95 and stood below 97 for nearly two weeks. It then rose to normal and about that time the albumin was found to have disappeared from the urine. In another case admitted with the woman having convulsions every ten minutes I injected into the vein about two quarts of normal salt solution. At the conclusion of the infusion the temperature was 106. I do not know whether the saline solutions cause such a great rise of temperature. The urine which had been boiled twice and found solid, two hours after the injection of the salt solution and just before death was $\frac{1}{8}$ fluid. In another case the same point was noted; the urine was solid on boiling before transfusion and found to have had fluid some time afterward. These cases, moribund on admittance, had been in poor homes and had waited too long before coming into the hospital. In the last case the temperature was not elevated, even after transfusion. I believe the temperature range indicates an evidence of toxæmia. Another evidence of toxæmia is that all three cases gave birth to dead foeti, labor in each coming on spontaneously a few hours after entering the hospital, continuing unassisted and without traumatism.

Dr. NORRIS: Before the discussion closes I would like to bear further testimony to what Dr. Davis has said in regard to the eliminative plan, treating the condition as a toxæmia and looking to the kidney and liver as the important factors. That plan throughout the past five years has been carried out at the Preston Retreat and in my consultations. I have an average of two or three cases at the Retreat each year. By an active eliminative treatment it has been my good fortune not to have lost a case.

There is no doubt about the value of the salines and veratrum—the latter drug I estimate most highly—but I should like to utter a word of caution against the very large doses of veratrum. I nearly lost a patient by a hypodermatic dose of 20 drops of the fluid extract. Small doses, five to eight drops, given at frequent intervals will accomplish the same reduction of pulse and the same relaxation and you have the effects of the drug more completely under your control than when using large doses.

A clinical observation that has repeatedly impressed me is that in the presence of eclamptic seizures, while we may, by the hot pack hope to promote elimination by the skin, and by the use of the salt solution aid the kidneys, yet the elimination which occurs through the intestinal canal is of greater value than any other channel at our disposal. I have the most profound respect for the use of concentrated solution of Epsom salts for that purpose. I have said to doctors, whom I have seen in consultation that if the patient's bowels could be freely moved (and by freely I mean 12 to 24 stools in 24 hours) and if practically lavage of the intestinal canal can be secured by concentrated Epsom or Rochelle salts, the patient will be given the best chance to recover. This plan of treatment cannot have any value, except in the elimination of poisons. If the case has reached the stage of cellular necrosis elimination, however active, will not save the patient. If the patient is unconscious and cannot be made to swallow, croton oil may be placed upon the tongue and by injections of glycerine, turpentine, and Epsom salts into the rectum, a stool may be obtained. So highly do I value Epsom salts for these cases, I have introduced them into the stomach by means of a stomach tube after washing out the stomach, to allay the vomiting. If the bowels respond I feel hopeful for the patient.

I am very glad to hear Dr. Davis say he scarcely approves of the active obstetrical treatment of eclampsia. The two cases of eclampsia that I have lost have been where I have attempted accouchement forcé. One case was at Blockley. I knew that the child had perished and did craniotomy after dilating the cervix. Despite a rapid delivery I lost the patient. I believe that the rapid delivery added to the dangers of profound shock and gave her less chance of recovery.

With reference to temperature, I have always felt that high temperature in these cases was an evidence of the toxic effect on the nerve-centers, and the fall of the temperature I have looked upon as the result of the very aggressive and depleting treatment these patients receive.

The depression following the use of chloroform, and veratrum, the profuse sweating, the purgation, and the other very active measures that we employ, would probably lower any one's temperature. I believe that the subnormal temperature is due to the rapid elimination and to the exhaustion that follows the active treatment of this disease. The elevation of temperature during convulsions I have regarded as the direct action of the poison on the nervous system.

Dr. REYNOLDS WILSON: When I spoke of the use of morphia, calomel, and chloral I selected those drugs as specifically useful and did not intend in any way to throw in the background the methods emphasized

by Dr. Norris and Davis. I feel it only in justice to the service with which I am connected at the Lying-in-Charity to make the statement that the further treatment in the use of salines and transfusion is routinely followed out, also the use of hot packs. I feel constrained to say this inasmuch as we get a number of the post-eclamptic cases and although our treatment is published heroically I regret to say, owing probably to the poorer district from which our emergency cases are supplied, our results are not so favorable as those mentioned. We have to treat from 3 to 5 such cases each year, and of these we are apt to lose a considerable proportion owing to the serious condition in which they are admitted.

Dr. E. P. DAVIS: With reference to the use of *veratrum viride*, I have never found it necessary to exceed three doses each of 10 minims of the fluid extract given at intervals of one hour. No bad effect has followed these doses in my experience. It is well known that *veratrum* assists greatly in the dilatation of the os and cervix in the earlier part of labor.

The use of copious saline injections into the bowel is most valuable, but to be efficient very large quantities must be employed. In some cases I have used as much as from six to eight gallons.

Some of the alkaloidal poisons present in toxæmia produce a fall of temperature in some patients. The occurrence of high temperature in eclampsia is thought to be owing to paralysis of the heat-center and is a sign of a dangerous condition.

Should the patient survive eclampsia and be delivered, free stimulation is often required to enable her to thoroughly react. Such cases are often lost from gangrene of the lung or gangrenous hepatitis. In fact, the patient's life or death seems to depend upon the extent of cellular necrosis in the parenchyma of the important excretory organs. If marked cellular changes have taken place, she cannot recover no matter what treatment be employed. If, however, the toxæmia is of recent origin and the patient's organs are not extensively altered, prompt elimination may save life.

Official Transactions.

FRANK W. TALLEY, *Secretary.*

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, April 11, 1899.

The President, WILLIAM R. PRYOR, M.D., in the Chair.

*Hour-glass Constriction of the Membranes in the First Stage of Labor:
A Clinical Study and Report of Five Cases.*

BY ERVIN A. TUCKER, M.D.

(See page 45.)

DISCUSSION.

Dr. E. B. CRAGIN: The author is entitled to the thanks of the Society for bringing this subject before us. Personally, I am indebted to him for having done so. The condition is not so rare as one might think but occurs two or three times in every thousand cases. This afternoon, just out of curiosity, I looked over the records of the last two thousand cases delivered at the Sloane Maternity, and I found among them six instances in which this hour-glass constriction of the membranes occurred. In three of the cases labor was at full term; in the remaining three it was premature. We can easily understand the cause of this constriction. It is due to the absence of the ball-valve—the child's head—in the lower segment of the uterus as a result of a faulty presentation. Prematurity is also a cause of the condition by reason of the child's head being too small to fit the lower zone of the uterus and permitting the bag of waters to descend. I saw a case recently in which the bag of waters protruded through the vulva. It is important to bear in mind the possibility of this condition existing in order that we may avoid the dangers of the dry labor which is the result of rupturing the membranes before dilatation of the cervix is complete.

Dr. EDWARD A. AYERS: I am very much obliged to the Society for inviting me to be present to hear this very interesting paper. I confess I do not feel equal to discuss it. It is rather a novel theme to be made the special subject of a paper. Of course, I realize that the chief value of this paper lies in the fact that it draws attention to the detailed man-

agement of labor which is the tendency in modern obstetrics. I am surprised to find that Dr. Tucker gives prematurity as a cause of this condition, for in the some three or four cases which I have seen the patients were at full term. One of the chief points which should be made is the importance of making a careful examination before the membranes are ruptured. I have been much impressed with the necessity for doing this by the cases of difficult labor which I have been called to see in which the membranes had been artificially ruptured in order to hasten delivery. In the condition under discussion it is especially important that the membranes should not be ruptured. I have occasionally employed counterpressure by means of Barnes' bag introduced into the vagina to sustain the membranes until the cervix becomes soft and dilated. In cases in which the membranes have been ruptured it is sometimes worth while to introduce Barnes' bag into the cervix to assist in its dilatation. Although I have never tried it, I would suggest that the deficiency of a dry labor might be supplied by injecting into the uterus a sterilized fluid and retaining it there by the Charpentier bag.

Dr. VOORHIS: The paper is so complete that nothing can be added. I have seen six cases of constriction of the membranes at the Sloane Maternity. In several instances I noticed some separation of the amnion from the chorion. In three of the cases there was a prolapsed cord; in others there was a deformity of the pelvis. In nearly every case the child was stillborn.

Dr. EGBERT H. GRANDIN: I have nothing to say for the simple reason that I cannot at the present moment recall having seen this condition of which the author speaks. I look upon the paper as a noteworthy one, for the reason that it calls attention to a condition which is comparatively frequent occurrence and frequently overlooked. I can easily understand how it happens, and very probably the reason why I have not noticed it in my cases is because it has always been my policy to interfere early and rather actively in cases in which I have detected some abnormality in presentation. The paper further teaches a point upon which stress should be laid, *i. e.*, that we should not assume that the first stage of labor is over and proceed to rupture the membranes before the second stage has begun. The presence of the bag of waters in the vagina is no proof that the second stage has begun, and, before rupturing the membranes we should always introduce one or more fingers beyond the bag to find out if there is a full circle of dilatation. Furthermore, the accoucheur who is on the lookout for abnormal pres-

entation and corrects, if early *lege artis.*, will never see the condition of the membranes described and will rarely witness tedious labor.

Dr. S. MARX: The paper is of immense scientific value, but for practical purposes I believe that it has very little bearing except upon the treatment of dry labor. When we look into these cases we find underlying factors, such as malpositions of the presenting part, prematurity, or a contracted pelvis. Now, this brings up the subject as to whether or not these factors are not the cause of so-called constriction of the membraneous sac. If this be carefully investigated and proved to be a fact, I know of no other way to prevent premature rupture of the membranes except by correcting the malposition. The mere introduction of Barnes' bags will do no good. Unless the cause which produced the condition be removed it will cause rupture. This is generally a malposition of the presenting part, which should be corrected. Personally, I have no use for Barnes' bags. I have delivered 120 cases by dilating the os with the hand and the results have been ideal. None of the children were lost in the first 50 cases and only two mothers were lost. If Barnes' or Charpentier's bags are used you often transform a normal presentation into an abnormal one, something is going to happen—instead of a well-adapted head, you will get a falling down of the cord or some other.

Dr. BROADHEAD: I cannot add any cases to those already mentioned, but I can speak with considerable feeling upon the subject of dry labor. This is a condition which should be guarded against; when it does occur it should be taken care of. The most important thing is to watch the case closely and prevent it. The paper is of great value and I am very glad to have heard it, for I shall now watch these cases even more closely than before.

Dr. R. A. MURRAY: Connected with the paper there are two or three practical points to which I would like to call attention. In the first place, long ago we were taught that if the presenting part did not come down in the pelvis, there must be some obstruction to the descent of the presenting part, and that it must be found out what this obstruction is. In the five cases reported by the author, labor was premature and there was an obstruction. Now, what was that obstruction? Merely constriction of the cervix and nothing else. By passing up the finger back of the bag of waters this constriction of the cervix can be felt. The condition should be called constriction of the cervix instead of constriction of the bag of waters. Protrusion of the bag of waters means that the presenting part is in malposition and does not fill the cervix—and why not? Because of the constriction of the cervix and malposition

which is frequently present when labor is premature. A premature labor means an undeveloped foetus and a large amount of water, for we know that during the latter months of pregnancy the water diminishes as the child grows. There is nothing to be said about constriction of the bag of water, but there is much to be said about a cervix which is not dilated. No woman in labor should be allowed to remain with an undilated cervix for there are many safe and efficient methods of dilating it. Not long ago I saw a case of difficult labor with a colleague, one of the members of this Society. The patient, who was a very large woman, was water-logged and convulsions were imminent. He dilated that cervix with the hand and delivered a nearly sixteen-pound child in three-quarters of an hour.

If a malposition is present, you must carefully examine the patient with the finger without rupturing the membranes to find out why the presenting part does not descend. If you cannot determine this with the fingers, introduce your whole hand, and when you have discovered what the faulty position is, correct it; or, do a version and bring down the feet. If necessary, give the patient chloroform.

Contraction of the pelvis, premature labor, and malposition are the most important factors in non-descent of the presenting part, and consequent formation of a large bag of waters with constriction, or non-dilation of the cervix uteri.

Dr. MALCOLM McLEAN: I have seen a number of cases in which this condition was present, and my experience has been similar to that of the author in regard to prematurity and the position of the child being causative factors. I first noticed the condition when making a study of podalic and breech cases while preparing a paper which was later presented before this Society. In these cases I noted the lack of dilatation and found the condition which he describes—a small, undilated os, with the bag of waters filling the vagina and in some instances protruding through the vulva—and I have always looked upon it as a positive sign of malposition, especially if seen during the early hours of labor and if the patient is at full term. I leave these cases very carefully alone, and I think this is what the author wants us to do. Spontaneous rupture will occur, and the constriction will suddenly give way. If we assume that the second stage of labor has begun and rupture the bag, we will find a very small dilatation which will not permit the child to be born, and a dry labor will be the result.

Dr. TUCKER, in closing: I am glad to have the six cases mentioned by Dr. Cragin added to those reported in the paper. In regard to prematurity being a causative factor, I said in the paper that I saw no

theoretical reason why this condition should not occur at full term. In three of the six cases referred to by Dr. Cragin it did occur at full term.

In regard to the remarks made by Dr. Murray as to the condition being due to constriction of the cervix, this point was mentioned in the paper, which considered the subject purely from a clinical standpoint.

In addition to those reported I have seen another case of this kind which occurred about two weeks ago. I was called by a physician, who told me that his patient was in the second stage of labor. I noticed that she was not bearing down, and upon making an examination found that the cervix would not admit more than two fingers. We were obliged to wait several hours for the cervix to dilate.

Official Transactions.

JOSEPH BRETTAUER, *Secretary.*

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Stated Meeting, April 18, 1899.

The *President*, GEORGE TUCKER HARRISON, M.D., in the Chair.

A Case of Appendicitis.

Dr. J. E. JANVRIN: The case which I am about to report is interesting on account of the youth of the patient, a little girl, ten years of age. I was called to see her in consultation with her physician, who had been in attendance upon the case but twenty-four hours, although the disease had been going on for a week or more at that time. As an operation was indicated, the child was at once removed to St. Elizabeth's Hospital, where I saw her in the evening, but found the bowels so loaded with fæces that it was impossible to make a satisfactory examination. A large dose of castor-oil was given, and upon the following morning it was very evident that an abscess as large as a goose-egg had formed in the region of the appendix. An incision was made down upon it, the pus evacuated, and the cavity washed out. The appendix was not found, having disappeared during the process of ulceration and degeneration which had been going on. A counter-opening was made in the loin for the purpose of obtaining through-and-through drainage. During the first twenty-four hours an enormous quantity of serum was discharged through the wound in the loin. This was followed by a discharge of pus, which kept up for over a week. The abscess cavity was washed out daily with a fifty-per-cent. solution of peroxide of hydrogen. On the third day the gauze drain was removed and replaced by a smaller one. In less than three weeks both wounds closed up perfectly. I feel confident that the good result was to a great degree due to the very free posterior drainage which was made. I have employed this method in three cases in which it was not possible to obtain good drainage anteriorly, and have found it most satisfactory in keeping the abscess cavity clean.

DISCUSSION.

Dr. BACHE MCE. EMMET': I should think that drainage through the loin would be up-hill unless the patient's hips are elevated.

Dr. JANVRIN: The track is a little oblique. If the patient's hips are

elevated, it is almost straight up and down, and in the *male* subject it is the best method for obtaining through-and-through drainage. The same thing holds true in very young girls, in whom the vagina is too small to allow free drainage.

Dr. A. PALMER DUDLEY: At the Harlem Hospital I have operated upon a number of cases of appendicitis. In the female it is my invariable custom to drain through the posterior cul-de-sac, keeping the patient in a half-sitting position. The method advocated by Dr. Janvrin would be applicable in the male, but I would prefer the vaginal route in the female because the cæcum lies lower in the latter than it does in the former, the appendix lying nearly on a level with the ovary and tube. I recall two very severe cases which would have died undoubtedly had I not opened the cul-de-sac freely. In cases in which the pus has burrowed up and lodged about the kidney and liver, as I have seen it, it might be well to make an incision in the loin and drain in that way.

Dr. JANVRIN: I have found that these cases are more readily drained through the loin than through the cul-de-sac, for the reason that the pus is high up. Dr. Dudley states that the appendix is on a level with the tube and ovary. They are a little lower than that, I think.

Dr. DUDLEY: I recently saw a case in which the appendix and tube were end to end and pus passed from the appendix through the tube into the uterus. I would ask Dr. Janvrin if he does not usually find the appendix near the appendages in making recto-vaginal touch in women who have appendicitis? In regard to drainage through the loin, in the case reported the pus had probably gone behind the cæcum and was high up. In the case of a man seen at the Harlem Hospital, pus was found way up under the liver, at least ten inches from the appendix. I made no counter-opening in the loin, but drained through the wound and kept the man in a semi-recumbent position. He recovered, although pus had entered the general pelvic cavity and the case was a terrible one.

Secondary Laparotomy.

Dr. DUDLEY: At one of our recent meetings the subject of secondary operation upon women on whom conservative surgery of the ovaries had been practised was discussed. At that time I said that I had never been obliged to do a secondary operation; but since then there came back to me a patient whose abdomen I had opened some months previous. On November 9, 1898, I did a laparotomy for retroversion with adhesions, and found it necessary to remove half of one ovary and half of each tube in addition to doing a hysterorrhaphy. The patient made

a good recovery, and left the hospital free from pain. She had been told to report at the clinic occasionally, and it so happened that one day she drifted into the clinic of my assistant, where a number of students were receiving instruction. One of them inserted a bivalve speculum somewhat roughly. This was followed by pain and bleeding. When I saw her, in March, she had been bleeding for thirty days, and, as she had been five days over her time when it began, I thought I had a case of extra-uterine pregnancy to deal with, and decided to open the abdomen again. This was done and the following conditions found: The uterus had become separated from the abdominal wall until the ligament was $1\frac{1}{4}$ inches long, $\frac{3}{4}$ of an inch wide across the top of the fundus, and $\frac{1}{8}$ of an inch thick; but it held the uterus up in good shape. Down in the left side of the pelvis was a mass which resembled an ectopic gestation. Everything was matted together, and it was with great difficulty that a large blood-clot was removed, and with it the left tube and ovary. I then brought up the right tube and ovary—upon which I had operated four months previous—and found protruding from the open end of the tube a piece of silk ligature, which had been used at the first operation. This was removed and the tube and ovary dropped back into the pelvis, as I had promised the patient that I would not remove both ovaries. The patient has made a good recovery and is free from pain, but it is quite possible that I may have to operate at some future date for the removal of the remaining tube and ovary. The pathologist who examined the specimen reported that it was not an extra-uterine pregnancy, but a hæmatoma, well organized, and therefore of not very recent date.

The case is an instructive one because of the presence of the unabsorbed silk ligature which remained from the previous operation. So far it had caused no trouble, but might have done so in the future. The ligature was of twisted Japanese silk. I no longer use this silk, but employ instead the finest floss-silk, which I buy in dry-goods stores. I do not think that a twisted-silk ligature ever becomes absorbed. The floss-silk undergoes a process of maceration in the tissues and eventually disappears. Fine-silk sutures used in closing the skin of an abdominal incision will entirely disappear in about eight days. This is not the case, however, with a heavy-silk ligature. Some years ago I operated upon the wife of a physician for double pyosalpinx, and ever since the patient has complained of pain and discomfort. Recently the silk which had been used as an over-and-over suture in the broad ligament was passed through the bladder, entirely unchanged.

DISCUSSION.

Dr. J. D. BISSELL: I do not think that pedicle silk is ever absorbed. In a case upon which I operated two years after the first operation, the pedicle ligature was still there.

Dr. JANVRIN: The old silk which was formerly used on ovarian pedicles was probably never absorbed. In fact, I know that such ligatures were not absorbed in several cases in which my old preceptor, Dr. Peaslee, operated many years ago, as shown by autopsy made some ten years subsequent to the operation. The pedicle ligatures were found intact and partially covered with plastic lymph. They had not been a source of irritation in these cases, but in other instances they might be and undoubtedly are the cause of trouble. Years ago it was not unusual to see an abdominal fistula leading down to a pedicle in the abdominal cavity. Such cases were treated by washing out the fistulous tract and in some instances the ligature would finally be discharged through the sinus.

Dr. DUDLEY: Twenty or thirty years ago William Warren Green of Maine was in the habit of using horsehair in all plastic operations about the face and neck. This he prepared by boiling for two hours in a saturated solution of borate of sodium in order to make it strong enough for suture purposes. Such sutures leave absolutely no scar, which is a great advantage. He never wrote anything upon the subject and the use of horsehair sutures seems to have died with him.

Dr. BISSELL: Horsehair is very elastic, and it is probably for this reason that it leaves no suture-pits.

Dr. L. GRANT BALDWIN: I do not think that the custom has died. Horsehair has been in use as a suture material on all ambulances right along.

Dr. EMMET: I would like to ask the members whether they have made use of the animal extracts in the treatment of uterine disease. I have recently reread the article of Robert Bell, published two years ago, in which he claims that he has cured cases of carcinoma uteri by using the various extracts—thyroid, mammary, and parotid, and reports cases of fibroma in which the size of the tumor has been greatly reduced by this treatment. In a paper which was read recently the claims made by the author and the results recorded were so remarkable as to make one wary of them. However, this treatment is now so much in vogue that it behooves us to become familiar with it. I have noticed that in many cases reported in which the use of the animal extracts was followed by good results, other treatment was also employed. For in-

stance, in one of the cases reported by Robert Bell, the patient was curetted; therefore, it is a question whether the improvement was due to this or to the animal extract. However, we know of so much that is to the credit of thyroid extract, that it becomes interesting to sift the merits of these newer products.

Dr. GEORGE TUCKER HARRISON: I have used the thyroid extract in a case of myoma accompanied by profuse metrorrhagia after having curetted and packed the uterus. Several months later I was gratified to find that the mass had diminished in size; in fact, it seemed to be reduced fully one-half its former size. In this case it is not likely that I deceived myself, for all my interests were the other way. I had told the patient that operation would be necessary if the treatment did no good. A similar good result was seen in a second case after a four weeks' use of the extract, no other treatment being employed.

I have also employed the parotid extract. One of my patients, who has been taking it, has been suffering from diarrhoea. I would like to know if this may be attributed to the extract.

Dr. EMMET: Parotid extract causes a great deal of intestinal cramp, which is often mistaken for uterine pain, and is apt to produce diarrhoea.

Dr. DUDLEY: I have employed the extracts in four cases, and at the present time have a patient with a large fibroid who is undergoing this treatment. I find that the mammary extract is much better borne than the thyroid, which has a bad effect upon the stomach and heart; it does, however, produce uterine pain. When this occurs, I reduce the dose.

Dr. HARRISON: One of my patients lost a good deal of flesh while taking thyroid extract, and was obliged to discontinue its use for that reason. This is an objection, for, while it may be desirable to reduce obesity in some cases, it may cause too great a reduction. I wrote to Dr. Hammond in regard to this point, and he replied that the extract undoubtedly reduces a person's weight if taken in large doses. He said further that it is a dangerous remedy, and that patients who are taking it should be closely watched.

Dr. EMMET: I have seen excellent results follow the use of thyroid extract in cases of myxœdema.

Dr. JANVRIN: Many people take thyroid extract without medical advice for the purpose of reducing their weight. In regard to mammary extract, I would like to know whether this really has any permanent effect upon the size of a myoma, or whether it reduces the congestion.

Dr. DUDLEY: I have not had sufficient experience to answer that question. In the fibroid case referred to, I did a Hegar operation, and

menstruation has ceased. I am now giving the extract to two other patients, in only one of whom have the appendages been removed. It seems to act like a charm in relieving the neuralgic pains from which these patients suffer.

Official Transactions.

J. D. BISSELL, *Secretary.*

TRANSACTIONS OF THE AMERICAN GYNÆCOLOGICAL SOCIETY.

Annual Meeting, May 23, 24 and 25, 1899.

AN EXCERPT.

Personal Experience with Tuffier's Angiotribe.

BY I. S. STONE, M.D., WASHINGTON.

(See page 28.)

DISCUSSION.

Dr. HORACE TRACY HANKS of New York: I presume all of us have read a great deal about this method of controlling hæmorrhage, but that few of us have used it. I have not only seen the instrument used a number of times, but have employed it in about fifteen cases, and I can say, with Dr. Stone that in every instance it has proved very satisfactory—not because the operation was a beautiful one, or a skilful one, but because it was a surgical one. With this instrument you can clamp a pedicle and remove an organ with absolutely no hæmorrhage. Of course, accidents will occur with the angiotribe as with any other instrument. One case of hæmorrhage following its use has been reported, but the explanation is simple. The tubes and ovaries were removed with the angiotribe and then the surgeon proceeded to do a ventral suspension. This involved a great deal of manipulation and the result was a secondary hæmorrhage, which necessitated reopening of the abdomen and tying the artery. Had the uterus not been manipulated, this would not have occurred. I operated the same day, employing the angiotribe, but

cauterized the stump with the electric cautery as a safeguard. This can be done in all cases if we are afraid to trust to the angiotribe alone. I am sure that the instrument has come to stay. It is used a great deal at the Woman's Hospital in New York in lieu of ligatures.

Dr. J. DUNCAN EMMET of New York: I have used this instrument with excellent results. I have also employed Dr. Skene's electric clamps with equally good results, and I cannot see that the angiotribe possesses any advantages over the electric clamp, except, perhaps, in regard to convenience. In hospital practice it is easy to use Skene's forceps, for the apparatus is always at hand and ready for use at any time, but in private practice the conditions are different. If, as Dr. Hanks says, it is advisable to use the electric cautery after the angiotribe has been employed in order to guard against possible hæmorrhage, why not use the electric clamp in the first place? A certain number of cases of hæmorrhage have been reported after the use of the angiotribe. If other cases show that there is danger following its use, then it will be seen that the hæmostatic forceps of Dr. Skene possess the advantage.

Dr. PHILANDER A. HARRIS of Paterson, N. J.: I have not used the angiotribe myself, but I wish to say that I have been thinking of employing it and have been waiting for a report from the men who have had the courage to use the instrument. We all know that when we employ hæmostasis, by means of forceps or otherwise, we will get hæmorrhage if we manipulate the wound, and it has occurred to me that in this way the vomiting of the patient may cause bleeding to occur after we have used the angiotribe. It will have to be employed a great deal more before we can safely recommend it. The men who, like myself, use forceps and leave them on for forty-eight hours, are satisfied to let other men experiment. It seems to me that the instrument does not exercise the great pressure which is claimed for it. The angiotribe must be carefully and judiciously experimented with before we can know what can be accomplished with it. It was once thought that clamps and ligatures must be left on for a long time, but we have not found that this is not necessary. It is possible that the angiotribe is going to limit the use of clamps and ligatures. If so, the pressure which it exercised must be very great and very firm and must not cut. I trust that its use will not be followed by accident, for, if it can be depended upon, it possesses many advantages.

Dr. CHARLES P. NOBLE of Philadelphia: It would seem that the angiotribe is meeting with favor, if one can judge from what is said of it, but I cannot understand how such a large and clumsy instrument can find advocates for its use. The way to look at any new instrument

or procedure is to see whether it possesses any advantages over other methods in use. The fact that one accident has occurred after its employment is nothing against the instrument. The ligature method is perfectly safe, yet in the first ten cases in which I used ligatures I had one case of hæmorrhage in which it was necessary to reopen the abdomen. I have never had a case of hæmorrhage since. When silk ligatures were used I had infection in some cases—not many, but in a few. Since I have been using catgut I have had perfectly satisfactory results; therefore, I see no reason for discarding the ligature. Nor do I see how the angiotribe can be used, except under the most favorable conditions. It would be impossible to employ it in cases of impacted fibroid in which it is difficult to pass down even a needle. It seems to me that it is but a passing "fad," which will have its day and be forgotten. I agree with Dr. Duncan Emmet that if the instrument is so deficient that we have to add the electric cautery to ensure safety, it would be best to use Skene's instrument at once. I am sorry to interrupt the pleasant flow of commendation, but this is my opinion regarding the instrument.

Dr. J. E. JANVRIN of New York: I would like to add a few words to the remarks of Dr. Hanks regarding the use of the angiotribe at the Woman's Hospital in New York. I have seen it used by Dr. Cleveland on several occasions during the past winter for the removal of the uterus or of diseased appendages through the vagina. I have not employed it myself, but I must say it has worked beautifully in the hands of Dr. Cleveland, and its use has been followed by no hæmorrhage. On the other hand, I still use forceps in my vaginal work. I once used clamps. In vaginal hysterectomy for cancer I am in the habit of applying one pair of large forceps, which I have for the purpose, upon each broad ligament. I frequently remove them at the end of twenty-four hours and never leave them on longer than forty-eight. The question to my mind is this: Is the use of the angiotribe, which does its work in two minutes and leaves a perfectly dry field, preferable to the use of forceps applied to each broad ligament for twenty-four or forty-eight hours? We know with absolute certainty that we can employ the forceps without fear of hæmorrhage resulting; but, if the angiotribe is just as safe and if it saves the patient a great deal of nervous irritation and pain, is it not the better instrument?

Dr. J. RIDDLE GOFFE of New York: If, instead of placing forceps upon the broad ligaments, which must be left there forty-eight hours, we can now apply the angiotribe for two minutes, this is certainly an advance. At first I considered this instrument clumsy and tiresome, but I have since used it in two cases of vaginal hysterectomy and did

not find it so. I can understand how it might be tiresome in abdominal operations, but in vaginal work, while sitting, and with an assistant at hand, I did not find it at all clumsy. One of the cases in which I used it was that of a woman, twenty-two years of age, with an abscess of the appendages on the right side and salpingitis on the left, in which I was unable to pull down the uterus sufficiently to apply ligatures. I first tried to reach the right uterine artery, but this was impossible. After separating the bladder from the anterior wall of the uterus I was able to pass in the angiotribe and clamp the broad ligament. I then severed the pedicle with a knife. Two bites on either side are sufficient to control the bleeding in doing hysterectomy. On the left side I removed the tube and ovary. The patient made a perfect recovery.

The second case was one of bilateral ovarian abscess, each containing six ounces of pus. The uterus could not be drawn down. After separating the bladder from the uterus and obtaining plenty of room by making a posterior section, I grasped the broad ligament with the angiotribe, made two applications of the instrument on each side, and removed the uterus. This patient also made a perfect recovery. There was no hæmorrhage in either case. I believe the angiotribe has come to stay. With due deference to Dr. Noble, I do not think it is a passing "fad." In each of my cases I handled the instrument with more ease than I could have applied ligatures. The instrument which I used was brought to this country by a French student at the New York Polyclinic, who loaned it to me.

Dr. GEORGE M. EDEBOHLS of New York: I have used this instrument, and do not like it. The point which Dr. Goffe has made is a practical one, but with me it is a question between the angiotribe and the ligature, for I do not use clamps. The ability to apply a ligature high up in the pelvis is a matter of personal equation. This morning, while trying to use the angiotribe, I found that I could apply a ligature where I could not use the instrument. The angiotribe should not be used unless one can see what one is doing, for it is absolutely necessary to know what is between the jaws of the instrument. This is a disadvantage. A ligature can be applied by the sense of touch. To sum up my present impressions, I do not think the instrument is going to be a favorite one with me, for I find that I can do better work in any case with catgut ligatures.

Dr. STONE, in closing: As to Dr. Edebohls' remarks, we all know that he can apply a ligature where no one else can. I now rarely use ligatures in vaginal hysterectomy. When a man has a good record for doing this operation, and then has two deaths due, as he thinks, to in-

fectured ligatures, he is apt to look around for something else to use in place of them. There was a time when I used catgut with nearly as much enthusiasm as Dr. Noble. I have thought of using the clamp and cautery, but the difficulty of obtaining the necessary electrical apparatus and keeping it ready for use has deterred me, and I, therefore, turned to the angiotribe as a substitute for the ligature.

Vaginal Incision and Drainage for Simple Broad-Ligament Cysts.

BY T. J. WATKINS, M.D., OF CHICAGO.

(See page 32.)

DISCUSSION.

Dr. WILLIAM R. PRYOR of New York: I wish to remind Dr. Watkins that as early as 1896 I published in the *New York Medical Record* a paper in which I reported a number of cases of broad-ligament cyst treated through the vagina. In all such cases I think the peritonæal cavity should be incised for the purpose of ascertaining the condition of the ovary, tube, and peritonæum on the side opposite the cyst, for we so frequently see some form of adnexal disease present on the other side which upon examination appeared to be normal. My position regarding these cysts is about as follows: When they are large, reaching above the pelvic brim, they should be removed, not aspirated, through the abdomen; but when they are pelvic in situation, I am in the habit of treating them through the vagina by making a broad vaginal incision, evacuating the cyst, and ripping out a portion of the sac. Inasmuch as the contents are sterile, I do not pack the cyst cavity, and I cannot see what advantage Dr. Watkins obtains by approaching them between the folds of the broad ligament. It seems to me his operation is dangerous because it does not admit of inspection of the opposite adnexa.

I recall the case of Lizzie Sabre, in whom the cul-de-sac incision revealed a hydrosalpinx upon the right side and a very large broad-ligament cyst on the left. The cyst was too large to be removed through the vagina. I, therefore, opened the abdomen and took it away, treating the hydrosalpinx conservatively. The woman conceived, and has been delivered by a normal labor of a living child.

Dr. BACHE McE. EMMET of New York: In a paper which I read before the New York Obstetrical Society in 1892, I advocated retro-puncture in cases of broad-ligament cyst. I had made a study of this,

having been annoyed by attempts at extirpation of these cysts by the abdominal route, which were attended with much difficulty; therefore, I advocated the method which has been described by the author. Small cysts of the broad ligament are often ruptured during bimanual examination.

Dr. J. E. JANVRIN of New York: I remember Dr. Emmet's paper and am under the impression that it was read prior to 1890.

Dr. WATKINS, in closing: When all authorities say that broad-ligament cysts—differentiating these from cysts of the ovary involving the broad ligament—do not recur, it would seem that drainage only and not removal of the sac is indicated. These cysts are usually unilateral.

In regard to the remarks of Dr. Pryor, I have never drained a cyst which extended above the umbilicus. As to opening the peritonæal cavity, I do not see any special reason for not doing so, although it increases the danger somewhat by adding the risk of sepsis and adhesions of the intestine to the opening. The operation I described in the paper is not brought forward as a new one.

The Infrapubic Route in Surgery of the Uterus and Its Annexa.

BY WILLIAM H. WATHEN, M.D., OF LOUISVILLE.

(See page 39.)

DISCUSSION.

Dr. A. PALMER DUDLEY of New York: At the meeting of this Society in Boston last year I reported 103 cases of ovarian section without a death. I can now add 23 cases, making a total of 126 without a death. Eighteen of the patients have become pregnant since their operation. I prefer to do that and other conservative work upon the appendages through the abdomen, and this method was followed in the 126 cases. In only one case have I been obliged to reopen the abdomen. In November, 1898, the patient was admitted to the Post-Graduate Hospital, where I did plastic work on the cervix and perinæum, opened the abdomen, broke up adhesions, removed one-half of the left ovary, and performed hysterorrhaphy. The woman did well and soon left the hospital. On March 20, 1899, she returned suffering from what I thought was extra-uterine pregnancy, but which proved to be a large hæmatoma of the left appendage, which was probably caused by the rough introduction of a bivalve speculum by one of the students at the clinic a few days before.

I reopened the abdomen and found the uterus not adherent to the abdominal wall, but suspended by a ligament two inches in length, one-eighth of an inch thick, and half an inch wide. The right ovary was free, except for a slight attachment to the omentum. The left appendage was the seat of a large hæmatoma and embedded in a mass of adhesions. The entire mass was removed. Upon examining the specimen I found a silk ligature which had remained unchanged in the pelvic cavity since the first operation, five months previous. I usually employ fine floss-silk in the abdominal cavity, but, having none at hand, I had used Japanese twisted silk in this case. The patient made a good recovery from the second operation, and has menstruated twice without pain or discomfort.

Dr. EDWARD REYNOLDS of Boston: I am not much of a believer in the vaginal incision, for I prefer the abdominal route under ordinary indications. I would like, however, to say a few words about vaginal fixation of the cervix, for which I claim no priority, but which I have performed with good results. I have not done the operation many times, for it has but a limited application. It is not powerful enough to rival ventro-suspension or other established operations, but there are certain cases in which it would be worth while to add it to other plastic work. In cases in which several plastic operations are indicated, we hesitate to open the abdomen. In these cases it is easy to make an incision in the anterior fornix of the vagina and put in a stitch or two to correct the retroversion.

Dr. FERNAND HENROTIN of Chicago: I am an advocate of vaginal work in selected cases, but I prefer the abdominal route when I intend to do conservative surgery, for it is only in a few cases that this can be practised through a vaginal incision. Experience has taught in the past that vaginal coeliotomy cannot always be done successfully. If one is prepared to do what some French and German surgeons do, *viz.*, take out the uterus if the bleeding cannot be stopped, all well and good, but American uteri are not so easily disposed of, and the man who operates through a small hole in the vagina is sure to come to grief some day.

Dr. WILLIAM R. PRYOR of New York: I must apologize to the Society for rising to speak upon this subject, which has so often been gone over, not only by myself in print and before this body, but by many others. I think we may divide all operations upon the pelvic organs as those which proceed from in front of and those which proceed behind the uterus. In approaching diseased adnexa, my preference is for the operation behind the uterus, for the reason that it possesses all the

benefits which are to be derived from an approach through the lowest point of the pelvic pouch which ensures the most free drainage. So far as operating in front of the uterus through the vagina is concerned, I must say that I cannot see any advantages in so doing. The drainage is no better, the traumatism no less than in abdominal section. Sutures must be used and frequently ligatures. Furthermore, the procedure has a tendency to fix the body of the uterus and thus interfere with subsequent drainage. Now, through my posterior incision I have no trouble in treating conservatively small ectopic gestations, *viz.*, by splitting and suturing the tube after the evacuation, and those large blood accumulations which follow rupture of an ectopic sac can be most beautifully treated through Douglas' pouch. The same may be said of hydrosalpinx, small broad-ligaments cysts, adhesions binding the uterus posteriorly, and, in fact, about all the lesions to which the adnexa are subject, except the purulent ones which require removal where the uterus must be saved. It is particularly in the acute stage of tubal inflammation that we see the greatest and broadest application of the posterior incision, for I find that here it prevents suppuration. Again, in early ectopic gestation as in conditions which simulate ectopic gestation, the delay, hesitancy, and argument which must precede an abdominal section are unnecessary, for a small posterior incision will clear up the diagnosis in a few minutes and without danger to the patient.

Dr. J. WESLEY BOVÉE of Washington: I agree with Dr. Pryor that acute infectious cases should be opened early, and that this is best done through the posterior vaginal wall. I also agree with him that in cases in which there is suppuration the organs should be removed. Occasionally an accumulation of pus in front of the uterus demands the anterior incision, but these cases are rare.

Dr. PHILANDER A. HARRIS of Paterson, N. J.: It is very easy to become enthusiastic over an operation, and when one hears of the wonderful vaginal work Jacobs is doing in Brussels it is but natural that we should turn toward the vaginal route. However, if a man meets with many obstacles, he will not enthuse about vaginal work. There is scarcely an operation which can be done by the vagina which I have not done, therefore I speak from experience when I say that I cannot agree with the gentleman who compares vaginal work to "work in a dark hole."

Dr. CHARLES P. NOBLE: The only cases in which I think there is a field for vaginal work are those in which it is necessary to drain pus from the pelvis. I have drained in this way three cases of ectopic gestation, all suppurative. The patients recovered from the acute con-

dition and one of them is now in the hospital awaiting an operation for the removal of a large pyosalpinx which could not be removed at the first operation. Personally, I prefer the abdominal route.

Dr. A. LAPHORN SMITH of Montreal: I never open the abdomen for any condition which I can relieve in any other way, either by a vaginal operation or other treatment. In dealing with pus-tubes, however, if it were right to remove the uterus in every case, I would say that it would be best to attack pus-tubes through the vagina; but we must remember that removal of the uterus shortens the vagina very much, and that this is apt to cause trouble in the family.

In regard to the treatment of diseased ovaries, it is much more surgical to cut out a piece of a cyst-wall than it is to cauterize it, for cauterization is followed by scar-tissue and contraction.

Dr. J. RIDDLE GOFFE of New York: In regard to the case mentioned by Dr. Noble, one of suppurative ectopic gestation, which he drained per vaginam and in which he is expecting to operate for removal of a pyosalpinx, I do not understand why the radical procedure should not have been performed at the time of the first operation. Vaginal work has long since passed the experimental stage, and it permits of just as radical operations as does the abdominal incision. The smoothness of recovery after this work is remarkable. I have not lost a single case nor have any untoward symptoms developed. I employ the anterior vaginal incision, but when necessary I make an incision in the posterior fornix for the purpose of drainage. Into this a strip of gauze is packed, which is removed later by the nurse. No local treatment is necessary. It is absurd to speak of vaginal work as being done through a small hole. A free incision is made, and the appendages are easily brought down into the vagina and to the vulva, where the sun may shine upon them. As a matter of fact, they are much more readily reached from below than through an abdominal incision.

ABSTRACTS.

This Department is in Charge of the Following Staff of Sub-Editors:

DR. T. W. CLEAVELAND, DR. G. H. MALLETT, DR. A. D. CHAFFEE

PÆDIATRICS.

UNITED STATES.

The Pathogenesis of Gastro-Enteric Disease in Infants.

JOHN ZAHORSKY (*Pediatrics*, May 1, 1899) says that while the macroscopical lesions in infantile gastro-enteric disease are usually very trifling, histological study is much more satisfactory. In the mild cases the essential lesions are hyperæmia and cellular infiltration of the mucous membrane, while the severer forms show in addition necrobiotic changes in the cell substance; the epithelial cells may be shrunken, empty, or more or less disintegrated. Exfoliation of the epithelial lining is characteristic of cholera infantum; but in all these diseases there is more or less detachment of these cells, with consequent denuding of the capillary and neural plexuses. Concomitantly there are degeneration of the secretory glands and infiltration of the submucous layer and intracellular tissue with leucocytes and connective-tissue cells. The liver, kidneys, and even the brain and spinal cord may also show degenerative changes. All the various pathologic findings can, however, be placed among the morbid conditions produced by intoxication.

That some simple forms of diarrhœa are produced by the presence of acids in the intestinal canal has been sufficiently demonstrated, though other irritating substances, like the ichthyotoxicum of Mosso, a toxalbumose, simulate the action of acids. These acids, among which may be mentioned the fatty acids and acetic, lactic, and butyric acid, are formed in the ileum or colon, any acid arising in the stomach or duodenum being promptly neutralized by the pancreatic juice, the alkalinity of which is even increased under the stimulus of an acid in the duodenum. Another cause of gastro-enteric disease is the poisonous animal alkaloids; against these the intestinal fluids have no antitoxic action as they have against the albumins, and as they are readily diffusible, they rapidly enter the circulation and cause most violent local and general symptoms. These substances are numerous, but among them may be mentioned myelotoxin, tyrotoxicon, and neurin. The toxic proteids are still more important, especially the albumoses and peptones, formed in the process of normal digestion. These substances are transformed by the living cellular lining of the intestines, but, of course, any ex-

tensive destruction of the columnar cells results in their absorption; for this reason peptonized milk is harmful in severe enteritis or cholera infantum, and is indicated only when there is functional derangement of the secretions, with intact epithelial cells. On the other hand, if the alimentary canal be healthy, no symptoms follow the introduction into it of toxic proteids; thus the vegetable albumens, ricin and abrin, though very poisonous subcutaneously, are entirely inert by mouth; so, too, the venom of rattlesnakes, and the toxins of diphtheria, tetanus and other diseases. This is not because the mucous membrane exercises a selective power and rejects them, for they are not found in the fæces. There must be an antitoxic agent, and the pancreatic juice has been shown to possess the power, even in very minute quantities, of destroying these toxins; against certain poisons the bile also exercises antitoxic properties. Unlike the albumens, however, the alkaloids are not disintegrated by the intestinal juices.

Different foods in the duodenum stimulate the pancreas reflexly; thus foods rich in proteids cause an increased flow of trypsin, and those rich in starch, of amyllopsin; fatty foods give rise to an extra secretion of the fat-splitting enzyme, and acids to an increase of the alkaline salts. But with the insufficiently developed pancreas of infants, there is naturally the less response to stimulus and the greater liability of the organism being overwhelmed by toxins. Moreover, in the heat of summer the flow of the pancreatic juice is diminished. And if the duodenal cellular lining and the nerve filaments beneath become injured, food cannot arouse the activity of the pancreas. Fortunately, however, enteric disease does not so frequently involve the duodenum.

Regarding the physiological action of these substances, the effect of the acids is that of an intense irritant, giving rise to increased peristalsis, tenesmus, and possibly destruction of the colon cells, with a resulting simple dysentery. Gases cause increased peristalsis, but, so far as is known, are not toxic. Ptomaines vary in action according to their composition; many do not cause vomiting and purging, but by their local irritation and tissue destruction give rise to great prostration; contrary to the toxalbumens they depress the temperature, and clinically we see many cases of gastro-enteric disease with subnormal temperature. Often in a toxæmia due both to a toxic proteid and a ptomaine the temperature is thus kept normal, yet rapid dissolution with convulsions, stupor, and coma supervenes. The predominant action of the toxalbumens is that of an infectious fever; some cause degeneration of the neuron and subsequent marasmus, which latter, we must admit, does not always indicate catarrh of the intestine.

The function of forming toxins belongs to vegetable, bacterial, and animal cells. The human organism frequently generates in one portion substances poisonous to another portion; often this occurs in breast milk, poisons of various constitution and physiological action being secreted therein. Intestinal irritants are common, which excite increased peristalsis, pain, and indigestion, which may even go on to general atrophy; toxalbumens probably frequently occur, harmful only when the pancreatic secretion is deficient. Functional derangement of the alimentary glands and absorptive cells is another source of poisons; thus a pancreatic juice with too much fat-splitting enzyme may decompose more fat than the epithelial cells can transform, resulting in the over-accumulation of fatty acids, irritation of the mucous membrane, and diarrhoea. Another cause of enteric disease is the excretion in the gastro-intestinal tract of toxic substances formed elsewhere in the organism, probably a natural function, which, however, may terminate in disease of the epithelial lining, a process somewhat analogous to the production of malaria on the skin. Toxic milk may also come from faulty metabolism in a cow. Bacterial activity, however, is the greatest source of toxins which may be generated in the milk either outside or inside the body. Ectogenic poisons are infrequent, but may occur and cause cholera infantum; and probably other substances may be generated in milk, which, without possessing a general toxin, inhibit the activity of the intestinal cells, and thus predispose to true infection. Ectogenic intoxication gives rise to symptoms very promptly, while in endogenic poisoning, from which most of the severe forms of enteric disease arise, a period of incubation is necessary. Putrefaction of the intestinal contents is caused by the ordinary flora of the canal, but why they at times assume a virulence it is difficult to say; but the safety of milk lies in its rapid digestion and absorption, and anything that delays these processes gives these bacteria opportunity to work. When putrefaction does occur, the irritating material is promptly expelled; but the columnar cells frequently degenerate rapidly, and until these are restored there is a tendency to accumulation of food and thus to further putrefaction; also with such degeneration pathogenic bacteria gain entrance to the sub-mucous layer, causing a true infectious disease by the formation of poison within the tissues beyond the reach of the intestinal juices. At present it seems that the greater part of the entero-colitis is caused by the bacillus coli communis, which is capable of assuming sufficient virulence to penetrate even the normal mucous membrane; its virulence is much increased by successively passing through susceptible infants, as has been demonstrated in hospital epidemics where infection has come

through other means than the milk, such as uncleanness of the babies' mouths, hands of nurses and infants, playthings, clothes, etc. Other germs that may cause enteric trouble are Gärtner's bacillus, the streptococcus enteritis, the bacillus typhosus (it is usually impossible to diagnose typhoid in infants), the staphylococcus pyogenes and the bacillus pyocyaneus.

Another factor to be taken into account is the susceptibility of the particular infant. Breast-fed children show marked resistance, while artificial foods give little immunizing power; foul air and heat also reduce resistance. Also many of these toxæmias are due to the introduction of many different poisons, so that each disease becomes a study in itself. We may conclude, then, that putrefaction of the intestinal contents may be controlled by dieting, while the prognosis depends on the destruction of the epithelial cells; and that true infection of the intestinal walls cannot be cured by diet or antiseptics, but must run a somewhat definite course, with a tendency to spontaneous recovery.

OBSTETRICS.

UNITED STATES.

Post-Partum Hæmorrhage in an Opium Habitée.

J. T. KIDDER (*Mass. Med. Jour.*, May, 1899) was called to see a patient in labor with her fourth child. Her face was flushed and pulse full and forcible. It was found that she was an opium-eater, and had taken a considerable quantity to relieve her pains. The labor was easy, but delivery was immediately followed by a frightful hæmorrhage. The hand was introduced into the womb and the secundines delivered, but the bleeding persisted until ice was introduced. The patient was very low, but rallied after stimulation, bandaging of the limbs, etc. The child died thirty-six hours after birth in tetanic spasms. Four years later a similar scene was enacted, the child dying as before in spasms.

Her first three labors, before she contracted the opium habit, had been normal; no hæmorrhage, and the children all lived.

The action of opium is somewhat analogous to that of alcohol, stimulating in the first instance, increasing the action of the heart and arteries, and thus favoring hæmorrhage. Opium has been recommended in uterine hæmorrhage by high authorities, but that is simply for its quieting effect upon the system.

In regard to the death of the infants from spasms, cases are recorded by Tralles, Credé, Harl, and others, of convulsions, and even death, fol-

lowing moderate doses of opium administered to young children. And since opium is rapidly absorbed and carried by the blood to all parts of the system, the child in utero must undoubtedly be affected by the constant and excessive use of the drug by the mother, and be continually supplied with it as long as gestation lasts. After delivery the child must depend for its supply of opium upon the mother's milk, which might furnish it in undue proportions, causing a loss of balance in the nervous force, convulsions, and death.

Obstinate Hæmaturia during Pregnancy.

WILLIAM BIRD YOUNG (*Med. News*, May 13, 1899) records the case of a young primipara, who began to be troubled, when about three-months' pregnant, with frequent and painful micturition. Elixir of buchu, juniper, and acetate of potash gave relief. Three months later she noticed blood in her urine, and was also suffering from severe pain in her back and head. To make sure that the blood came from the bladder the patient was catheterized, and the urine was found to contain a large amount of fluid blood, and to be loaded with albumin. The amount passed in twenty-four hours was less than one pint. Her diet was restricted to milk and soup, hot baths were ordered, and 15 grains of gallic acid, and 15 drops of tincture of iron, every four hours alternately, were prescribed. The pains improved, but the hæmaturia grew steadily worse for two days, until the fluid passed from the bladder was two-thirds blood. Violent headache, and restlessness again appeared. A hypodermic of morphia and one drop of croton oil were administered. The oil acted freely and the patient obtained some sleep. As the iron and gallic acid failed to relieve the hæmaturia, the gallic acid was discontinued after three days, and 10 drops of fluid extract of ergot was ordered, alternating with the iron which had been increased to 25 drops. This treatment was continued for three days, when the urine began to clear, and did not contain so much albumin. The ergot was stopped, but in twenty-four hours the hæmaturia reappeared, continuing for two days, when she was delivered of a dead child. The child was very thin, the skin wrinkled and discolored, being a dark pink. The cord was black, but there were no clots in it. All the symptoms improved from the hour of delivery.

Several questions arise. Did the ergot kill the child? The patient stated that she felt no foetal movements after the third day's use of the drug. Was the hæmaturia relieved by the ergot or by the death of the child? Only two cases could be found recorded, after a most diligent

search of text-books and journals. The first was in the "American System of Obstetrics." There was continuous hæmaturia and epistaxis after the fourth month. Premature labor at the eighth month, with death from anæmia one month later.

The second case was reported by Dr. Huret in the *Medical News* of May 4, 1889. In this instance the hæmaturia began suddenly at the sixth month, and continued until the delivery at the normal time. There was no albumin, headaches, or scarcity of urine. Dr. Hirst thought that bleeding hæmorrhoids of the bladder, caused by pressure of the gravid uterus on the pelvic veins, was the explanation of such cases.

GREAT BRITAIN.

Malaria and Pregnancy.

F. H. EDMONDS (*British Med. Jour.*, April 29, 1899), from an experience of twenty years in the malarious districts of British Guiana, is convinced that malarial fever is responsible for a large number of still births. The form of the fever varies, and the effects vary correspondingly. Simple intermittent fever has no effect on conception, and, if mild, no influence on the mother's or child's life. In the more acute cases, where the temperature rises over 104° , abortion usually takes place. After the sixth month of pregnancy malaria gives rise to a more acute and dangerous condition. If the patient is attacked by intermittent fever the foetal movements become very strong, continuing in many cases until the temperature passes 103° , when a painful, continuous cramp of the uterus appears to limit the motions of the foetus. In many cases the foetal movements are never felt again, although the next paroxysm will be marked by strong contractions of the uterus, to be followed later on by the expulsion of a dead foetus. The writer's custom is to prescribe 5 grains of quinine every four hours, and where the temperature has not passed 103° , and foetal movements are still felt, the malaria is often checked and the pregnancy has proceeded to full term. Many cases could be cited where women during the early months of pregnancy have taken 10 and 15-grain doses of quinine and continued the pregnancy to term.

When the bilious remittent type of malarial fever appears during or just after parturition, the mother's life is in the greatest danger. The patient has five or nine days' alternations, each marked by higher temperature, deeper jaundice, and greater weakness, then dies quietly, with many appearances of puerperal fever, but free from uterine pain or tenderness, and with the lochia normal as to color, quantity, and odor.

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ORIGINAL CLINICAL REPORTS.

CLINICAL REPORT ON HUNYADI JANOS.

A special clinical report at this late day on this well-known mineral water which has received the unqualified endorsement of such masters in medicine as Virchow, Neusser, Bamberger, Roberts Pepper and others, seems almost superfluous. After a rather extensive clinical trial, the following cases are cited to illustrate the action of the remedy.

Case I.—Man, æt. 45, of plethoric habit, suffered from obstinate con-

stipation which had resisted the efforts of a number of competent medical men to overcome. Bowel movements were practically impossible without artificial aid and the patient had become a veritable slave to the laxative drug habit. Digestion was not seriously impaired except when he had not had a bowel movement for several days when his appetite became poor, and he had a general sense of oppression in the region of the stomach. Various laxative pills and fluids were taken with more or less unsatisfactory results. Epsom salts were particularly distasteful and excited nausea and vomiting. He was ordered Hunyadi János, a wineglassful at bedtime and in the morning before breakfast with the result that he secured one or two daily bowel evacuations which were entirely free from unpleasant subjective symptoms. After one-month's treatment with this water the patient never failed to secure satisfactory bowel movements, nausea or vomiting never occurred, and he volunteered the statement that the results obtained were much better than from any previous laxative. He was directed to continue the water.

Case II.—Woman, æt. 40, a typical lithæmic who suffered from obstinate constipation. She had in addition to a lithæmic gastric catarrh, loss of appetite and periodic exacerbations of digestive disturbances amounting to attacks of biliousness. She had taken sodium phosphate by order of her physician for a long time. Treatment was begun by careful regulation of the diet—largely non-nitrogenous in character—and an effervescent tablet of lithium bitartrate 5 gr., three times daily. Hunyadi János was ordered morning and night. At the end of two weeks she was free from bad taste in the mouth, acute nausea, water-brash and undue distention after eating. Although the general anti-lithic treatment had in all probability much to do with her general improvement, the watery bowel evacuations occasioned by Hunyadi kept her system clear of the noxious products of faulty metabolism, and effectually rid her of the symptoms due to fæcal accumulation. Treatment by general anti-lithic measures was continued for 6 weeks and she was then allowed to return to her ordinary diet. In this case the Hunyadi János, by its depleting action on the congestion of the abdominal viscera, undoubtedly had a salutary influence. It never induced griping or tenesmus but invariably produced satisfactory bowel movements.

Case III.—Man, 30, sedentary occupation; has suffered since boyhood from obstinate constipation. He has on several occasions placed himself under skilled medical treatment in an endeavor to radically cure constipation. Treatment by electricity, massage, outdoor exercise and special dieting, were all without avail and it became necessary to have

resort to laxatives and purgatives. This latter class of remedies, no matter how effective at the beginning, soon lost their effectiveness and it became necessary to resort to other remedies. He had within the last few years exhausted all the resources of the pharmacopœia and the patent-medicine shops, in his efforts to secure a satisfactory laxative that would not lose its effectiveness after a short period of use. In his case constipation of two-days' duration would occasion headache, general malaise, loss of appetite and inability to digest food. He was ordered Hunyadi János, morning and night. He has at this time been taking the water for three months and he has had regular daily evacuations. The certainty of the remedy was a surprise to himself and his physician. It never induces nausea or griping.

Cases IV., V., and VI. are all of a similar character, *viz.*, men in the prime of life and given to excessive indulgence in food and particularly in alcoholic beverages. They are as far as can be ascertained free from disease except periodic disturbances of the stomach and general system occasioned by drinking bouts. In all of these cases discontinuance of the alcohol and three or four days' free use of Hunyadi János sufficed to restore the usual health. The pronounced adjunctive power of Hunyadi as a restorative of equilibrium in these cases has become well known to a number of the writer's patients, some of whom resort to the remedy without professional advice.

Case VII.—Man, æt. 64; subject of general arterial sclerosis, cirrhosis of the liver and, as ascertained by examination of the urine, chronic interstitial nephritis. Physical examination shows hypertrophy of the heart and a loud, systolic murmur at the apex, transmitted to the axilla. He has as part of the clinical picture of cirrhotic changes in the liver, symptoms of gastric catarrh, with morning nausea and vomiting. Other objective symptoms present are caput medusæ, stiff, tense peripheral arteries, accentuation of the aortic sound and œdema of the legs. At times there are intensification of symptoms which compel him to remain in bed for several days. He has been placed on a tablet containing strephanthin 1-300 gr., nitroglycerine 1-100, and strychnine phosphate 1-60, as a general relaxative of arterial tension and stimulant to the heart. In addition to this he was placed on Hunyadi János as a corrective of the catarrhal condition of the stomach and in order to stimulate the elimination of the fluids in the tissues (œdema) by free catharsis Compound jalap powder, elaterium and Epsom salts have at various times been tried and subsequently discontinued on account of the irritation or unpleasant symptoms induced. This man has been under treatment on the above lines for six months. The

morning nausea and vomiting yield readily to a few-days' employment of Hunyadi János, as does also the dropsy when it becomes pronounced. The gastric catarrh has much improved.

The following conclusions concerning Hunyadi János seem correct:

It is, in varying doses, either an effective laxative or cathartic which is certain in its action and unattended with griping or tenesmus.

It is a valuable adjunct to the treatment of chronic gastric catarrh existing either independently or as an accompaniment of functional or organic changes in the liver.

It is of service in chronic constipation in which condition its effects are still operative even after prolonged use.

CLINICAL REPORT ON ICHTHOLDINE.

The formula of Ichtholdine, as announced by the manufacturer, is ichthyol and iodine in a vehicle composed of 42 per cent. of glycerite of hydrastis and 50 per cent. of boroglyceride.

It is offered as an antiphlogistic alterative, antiseptic and astringent for intra- and extra-uterine applications in various inflammatory conditions of the cervix, endometrium and vagina. It was employed in the following cases:

Case I.—Woman, thirty-eight years; married fourteen years; two children; no miscarriages; youngest child nine years of age. First delivery instrumental. Patient was in bed six weeks after confinement on account of weakness. Has never been well since birth of first child. Had lacerated cervix and perinæum repaired five years ago.

Her present symptoms are a constant backache and a yellowish leucorrhœa. Menses occur every twenty-eight days; flow profuse, lasting three to five days; passes clots and cannot remain on her feet for first two days of her period. Has constipation, frequent micturition and symptoms indicative of disturbance of the gastro-intestinal tract and nervous system.

Examination.—Perinæum good, cervix pointing upward, eroded. Uterus retroverted, large, tender but mobile. Ovaries and tubes healthy though somewhat enlarged and prolapsed.

Diagnosis.—Retroversion with endometritis.

Treatment.—Magnesium sulphate. Mixture nux vomica and min-

eral acids. Tampon ichtholdine and injection of ichtholdine into uterine cavity.

In one week there was less backache, less leucorrhœa, general condition improved. Local treatment continued and she was ordered a pill of aloes and mastich at bedtime. Intra-uterine injections and tampons of ichtholdine were continued at three-days' intervals for one month.

The patient is now much improved in general health. Pelvis is no longer tender, leucorrhœal discharge is almost gone and is of white color and the erosion of the cervix is entirely healed.

Treatment continued.

Case II.—Thirty-eight years of age; one child, six years of age. Difficult labor, puerperium normal, menses regular, last three or four days, not profuse or painful.

Complains of sinking sensation in abdomen; has leucorrhœa, backache, constipation, burning micturition.

Examination.—Rectocele and cystocele, uterus heavy, prolapsed; appendages negative.

Diagnosis.—Endometritis, rectocele and cystocele.

Treatment.—Plastic operation refused by patient. Endometritis treated by intra-uterine injections of ichtholdine and tampons of the same. This case could not, of course, be appropriately treated except by operation. However, at the end of one-month's treatment at the clinic by the above local measures, her leucorrhœa became diminished and changed in character, she had less pronounced pelvic symptoms and she states her general health is much improved. Treatment continued.

Case III.—Thirty-nine years of age; married eighteen years; two children; no miscarriages; youngest child eight years of age. Menses regular in time, last four to six days, profuse but not painful. She complains of leucorrhœa, backache, dragging sensations in hypogastrium, constipation, nervousness and dyspepsia.

Examination.—Perinæum relaxed, uterus retroverted but not fixed, appendages negative. Tough, stringy discharge from cervical canal.

Treatment.—Salines before breakfast. Intra-uterine injections of ichtholdine and tampons of same to cervix. Treatment by these local applications continued four weeks, at the end of which time the leucorrhœa had lost its thick, ropy character, was much diminished in quantity, she had less backache, and was improved in general health. Treatment continued.

Case IV.—Age, thirty-two years; married nine years; one child; no miscarriages; labor and puerperium normal. Patient complains of

leucorrhœa, yellowish in color, which stains her clothing. She came to the clinic for treatment of leucorrhœa and wants to know why she does not again become pregnant.

Examination.—Perinæum good; uterus anterior, somewhat enlarged, hard, freely mobile; no disease of appendages.

Treatment.—Recommended curettement but this was refused. Intra-uterine injection of ichtholdine and tampons of same. Treatment was continued three weeks, at the end of which time she had so much improved that she discontinued her visits to the clinic.

Case V.—Thirty-three years; married ten years; four children; three miscarriages. Last pregnancy ended in miscarriage at two and a half months. Complaints of dragging sensations in pelvis, with pain in both inguinal regions, leucorrhœa, backache.

Examination.—Pelvic floor lacerated; transverse laceration of cervix with ectropion. Uterus large, soft, anterior, mobile; appendages negative.

Diagnosis.—Subinvolution, with laceration of cervix and perinæum.

Treatment.—Irrigation of uterine cavity with alkaline solution (one gallon), temperature 115°, followed by intra-uterine injection of ichtholdine, with tampons of same. She was ordered also a tablet containing ergotin $\frac{1}{2}$ gr., ext. viburn. prunifol. 2 grs., ext. nux vom. $\frac{1}{12}$ gr., hydrastin $\frac{1}{16}$ gr., three times daily. Irrigation with saline solution was given at short intervals for ten days, after which it was discontinued and local treatment by ichtholdine was given alone. Leucorrhœa has diminished, she is free from all pelvic symptoms and is much improved in general health.

Cases VI., VII. and VIII. are patients whose clinical histories and pathologic conditions are practically the same as the last-mentioned case, viz., endometritis and subinvolution, with leucorrhœa, backache and symptoms of pelvic distress. In all of these cases the treatment was by ichtholdine locally, the tablet of ergotin, nux and hydrastis internally and the hot vaginal douche properly administered—i. e., in the recumbent posture and consisting of two gallons at each time.

The results were the same in all, viz., discontinuance or diminution of leucorrhœal discharge, relief from backache, and pelvic misery and improvement in general health, with especial relief from annoying nervous symptoms.

Cases IX. and X. were of similar character—i. e., both had endometritis, with leucorrhœal discharge and erosions amounting to ulcerations, of the cervix. Treatment was by hot vaginal douching, intra-uterine applications of ichtholdine and tamponing with *antiseptic wool*

tampons thoroughly saturated with ichtholdine. In one of these cases the ulcerations—of six-months' duration—were completely cured in four weeks; the second case was more obstinate but at the end of eight weeks the ulceration had entirely disappeared.

Conclusions.—Ichtholdine is a valuable adjunct to the regular treatment of subinvolution of the uterus and of endometritis by means of hot douching, appropriate constitutional treatment, etc. The remedy has proven an effective palliative in those cases of inflammatory conditions of the uterus and adnexa, where operation, although strikingly indicated, has been refused.

It seems to be of especial value in ulcerations and erosions of the cervix.

In the series of cases in which it was employed it did not in any case prove irritating to the inflamed mucous membranes.

GRAY'S GLYCERINE TONIC COMPOUND.

The cases herewith reported in detail are selected at random from a large number of similar cases; the results in nearly all were identical. One important fact noted by this observer is that extemporaneous preparations of the ingredients announced as being present in Gray's Glycerine Tonic Compound did not possess the therapeutic properties of the original. As this observer subjected the remedy to chemical analysis and found that it contained the ingredients claimed by the manufacturers, he justly concludes that the virtues of the preparation are due to the proportions of the ingredients and their manner of combination.

The class of cases upon which it has been employed were those of general debility, neurasthenia, and the like. I found that it toned up the nervous system, increased the appetite, promoted assimilation, and in most instances caused a direct increase in strength and body weight. In this class of cases the following examples will indicate the action of the remedy:

Case I.—V., male, age fifty-one. Had always been a hard drinker. Had had gastritis at various times, and on two or three occasions delirium tremens. Was nervous and depressed. Had marked muscular tremors. Suffered from insomnia. He was put on $\frac{1}{2}$ oz. of Gray's Glycerine Tonic Compound three times a day. His whiskey was

diminished gradually until he took none. After two-weeks' treatment his appetite began to return, and there was less muscular tremor. He could sleep then without opiates. In two weeks more—a month from beginning with Gray's—he was practically cured, so long as he abstained from his drinking.

Case II.—J. Y., age forty; female; melancholia; had suffered losses of near relatives by death. Was losing flesh and had developed a cough. Had no appetite and was badly constipated. Had been taking cod-liver oil with creosote. This was discontinued and Gray's Tonic prescribed. A week's treatment showed improvement. In two weeks patient's face looked fuller, and she said she had gained five pounds. Cough was less. In four weeks her cough was gone. Was seen again after two months, when she had entirely recovered and the remedy was discontinued.

Case III.—J. B. C., age twenty-four; female. Complained of general malaise—nothing very definite—tongue coated, constipated, face broken out in pimples, headache at times, some insomnia. She was put on 2 drachms of Gray's t. i. d. and progressed under its treatment until she recovered.

In another class of cases Gray's Tonic has proved very efficacious—in sexual neurasthenias.

Case I.—Young man, recently married; nervous temperament. Had pronounced symptoms of sexual neurasthenia; general nervous depression, premature ejaculation, etc. In conjunction with salutary advice in regard to sexual habits, he was given G. G. T. C. in half-ounce doses t. i. d. At the end of a month he had entirely regained physical and mental health.

Case II.—H. B., æt. sixty, male. Had a strong sexual appetite and frequently indulged it to excess. Complained of "waning power." Gave history of gonorrhœa early in life. Examination showed he had a somewhat enlarged prostate. The treatment consisted of a code of rules in regard to his sexual habit and Gray's Glycerine Tonic t. i. d. He recovered completely.

In still another class of cases catarrhal conditions of the respiratory tract—G. T. proved effective. The selective action of glycerine for water is well known. In those cases where the secretion is profuse and coughing excessive Gray's Tonic had a marked effect in allaying the cough and diminishing the secretion. I will cite, for example, the following selected cases:

Case I.—P. B. S., male, age fifteen. Had gone through an attack of bronchitis, which left a chronic condition of congestion and hyper-

secretion. Cough was incessant and the expectoration profuse. The ordinary cough-mixtures had very little effect in relieving the condition. Gray's Tonic was tried, and an effect noticed in two days. Improvement started in and continued to recover. The dose was two drachms every four hours.

Case II.—J. Y., female, age fifty. Chronic bronchitis complicated with asthma. Patient was in the habit of getting a cold in the fall which always lasted through the winter. Asthmatic attacks occurred frequently. Cod-liver oil, emulsified fats, preparations of ammonia, tar, iodide of potash, she had tried faithfully, without much relief. She had gone away, one winter, to a high, dry climate, and escaped her bronchitis, but not her asthma. Gray's Glycerine Tonic, 2 drachms t. i. d., was then ordered, but there was no immediate improvement. However, as the patient said that it was the pleasantest medicine she had ever taken, and she might as well take that as anything, the remedy was continued for two months, with the results that her asthmatic attacks were much milder and the symptoms of bronchitis had almost entirely disappeared.

Female, seventeen years of age; mill operator; had gradually lost flesh and strength for a period extending over about seven months. At the time of beginning treatment she presented the picture of typical chlorosis. Her skin was a waxy green, her conjunctiva of sky-blue color, and she was emaciated to a marked degree. Menses had not been present for four months. The hæmoglobinometer on three separate examinations during a period of ten days showed remarkable corpuscular impoverishment—an average of 42 per cent. The subjective symptoms of muscular weakness, with mental lethargy, were most pronounced. She had been unable to take food except of fluid character, and in very small quantities, for several weeks. Appetite was totally absent and milk and broths, even in moderate amounts, occasioned gastric distress and were frequently vomited. She had at times paroxysms of pain resembling gastralgia. Constipation was a marked feature. Physical examination of the thorax revealed loud, systolic, blowing murmurs—hæmic—over the entire precordia, most pronounced at the base of the heart and in the carotids. There was prescribed in addition to rest, frequent bathing, peptonized milk and Bland's mass in ascending doses. Two-weeks' treatment by these measures failed either to increase the proportion of hæmoglobin or relieve the general weakness and marked disturbances of the gastric functions. She was then placed on Gray's Glycerine Tonic Compound, two drachms four times daily, and the iron was discontinued. At the expiration of

seven days she had desire for food, which was apparently digested and assimilated. She was given fluid extract of cascara sagrada in fifteen-drop doses at bedtime, in order to overcome constipation. Her appetite gradually returned; she was able after two weeks to take lighter articles of diet—eggs, toast, scraped raw meat—and she had consequently gained strength. Treatment by rest, bathing and the administration of Gray's Glycerine Tonic Comp. was continued for eight weeks, at which time she had gained fourteen pounds in weight, was entirely free from gastralgia and the symptoms of atonic dyspepsia and her hæmoglobin had increased to 82 per cent. She has had slight menstrual show and she is now so far convalesced that she is able to indulge in a fair amount of mental and physical exertion without experiencing undue fatigue.

Cases II., III., and IV. were patients of the clinical character usually designated general debility in which, in addition to disorders of metabolism—manifested by loss of energy and body weight—there were particular enfeeblement of the digestive functions amounting to well-marked cases of atonic dyspepsia. Two of these cases had been under various tonic treatments for periods varying from two to four months. In accordance with Albutt's dictum, concerning cases of neurasthenia and pseudo-neurasthenia, that the "stomach is the link in the vicious circle which has to be forged anew" ("System of Medicine," Vol. II.), these patients were placed on Gray's Glycerine Tonic Comp., the announced ingredients of which are well-known stomachics and restoratives of gastric functions. The details in brief are as follows:

Case II.—Male, twenty-nine years of age; book-keeper; of spare build; had been closely confined to business. He had gradually lost flesh and strength for several months past, was particularly conscious of almost complete failure of appetite and suffered considerably from a frontal headache, which was subject to exacerbations of a neuralgic character. Eye strain was detected and corrected by a skilled oculist (Dr. George M. Gould) but the headache persisted. Repeated physical examinations failed to reveal any organic disease except marked functional digestive disorders. Anorexia, distress after eating, indisposition to mental and physical exertion, epigastric tenderness and constipation were all present. The patient was first ordered comparative rest, a graduated diet and was placed on two-drachm doses, t. i. d., of elixir of iron, quinine and strychnine. He failed, however, to improve under this treatment and was placed on Gray's Glycerine Tonic Compound, tablespoonful in water, one hour before each meal-time. He was ordered in addition an aperient draught

at night (Hunyadi János). Within ten days his improvement was apparent to all his associates. With a marked increase in appetite there was a corresponding ability to digest food and the patient experienced a feeling of general improvement. At the end of one month's treatment he was discharged practically free from all subjective symptoms.

Case III.—Female; twenty-four years of age; housewife, with exacting duties; had gradually lost flesh, strength and ability to take and digest food. She was nervous to a marked degree, had characteristic symptoms of atonic dyspepsia, was unable to sleep and presented a typical picture of nervous exhaustion. Oxaluria was present. She was ordered rest, freedom from household duties, light diet and Gray's Glycerine Tonic Comp., half-ounce three times daily before meals.

The first change noted was an improvement in appetite and the ability to sleep. A modified "rest cure," with Gray's Glycerine Tonic Compound, was continued seven weeks, at the end of which time all the symptoms of atonicity of the digestive functions had disappeared, her appetite was better than it had ever been, she was able to assimilate food, rested well at night and was able to resume the care of her house.

Case IV.—Female, thirty-seven years of age; presented a picture the exact duplication of the previous patient, except that she had, in addition, a large transverse laceration of the cervix and destruction of the perinæum with beginning retrocele. Nervous irritability and exhaustion were excessive. Preliminary to removal to the hospital for operation she was ordered a week's rest in bed and half-ounce doses of Gray's Glycerine Tonic three times daily before meals. During her stay in bed she became much better and stood three plastic operations at one time without serious influence on her general health. She was kept in the hospital a month and for a month after returning home she was ordered complete rest. During all of this time she continued to take the glycerine tonic. Ten-weeks' treatment has sufficed to completely restore her health. The operation, with its removal of a constant source of irritation and exhaustion, had much to do with the woman's recovery but it seems the medicinal treatment in facilitating the proper assimilation of food and affording freedom from the digestive enfeeblement and distress is entitled to some credit.

Cases V. and VI. were typical examples of that exceedingly common class of cases known as chronic gastric catarrh—chronic dyspepsia. Concerning these cases Yeo says ("Clinical Therapeutics," Vol. I., p. 154) that medicinal treatment should be directed "to promote the functional activity of the muscular coat and secreting glands of the

stomach." In accordance with this teaching, and because glycerine has pronounced antiseptic properties and checks fermentation—these two patients were ordered to take G. G. T. C., 2 drachms before each meal and 2 drachms after meals. The history, in brief, is:

Case V.—Female, æt. 53; housewife; indiscreet in her diet; has had pronounced symptoms of chronic gastric catarrh for many years. At times she has exacerbations of symptoms which culminate in an attack of biliousness and compels her to remain in bed. She had for years taken all sorts of pepsin tablets and powders in various combinations, but the benefit therefrom was very slight. Symptoms were as follows: Appetite capricious, but on the whole poor. Tongue was deeply furred and red on the edges; breath heavy. Shortly after eating she had sense of fullness and distress in the region of the stomach. Eructations of gas, water-brash, and general gastric distress would constantly ensue after an ordinary meal. She was obstinately constipated, and had occasional attacks of vertigo. Dilatation of the stomach was present, as evidenced by physical examination and occasional vomiting of fermented material in which *sarcinæ ventriculi* were present. Treatment was first of all dietetic. Fluids at meals, except during the first week, when she was placed on an absolute milk diet, were interdicted. She was later allowed toast, chopped meat in small quantities, and broth; starchy foods were avoided. As for several months she had been using astringent silver nitrate, bismuth, etc., this class of remedies were deemed inadvisable and she was placed on Gray's Glycerine Tonic Comp., 2 drachms in water before meals and the same quantity after meals. This treatment, with rigid dietetic supervision, was continued for six weeks, and up to the present time she has been free from the symptoms of fermentation in the stomach, has no distress after eating, has a better appetite, is free from excessive nervousness, and is in better general health. She still takes the tonic. Constipation was relieved by night draughts of Hunyadi János.

Case VI.—Man, 40; plethoric; given to excesses in eating and drinking. For more than a year has had pronounced symptoms of chronic gastric catarrh, *viz.*, distress after eating, belching, water-brash, occasional attacks of nausea, loss of appetite, and marked general malaise. Dietetic treatment was the same as in the last case, and he was forbidden beer, which he had been accustomed to drink in large quantities. Gray's Glycerine Tonic Comp. was ordered in two-drachm doses before meals and after meals.

In ten days he was much improved, and at this time, seven weeks after treatment was begun, practically all his symptoms have disap-

peared. He is now able to resume ordinary diet; he is still taking the tonic.

Case VII.—Old lady; eighty-three years of age; in fairly good health, except for a moderate amount of debility incidental to her advanced age. For the past year she had indisposition for food, with a marked inability to digest what little she had eaten. She was placed on a better tonic before meals and pepsin and pancreatin powders (5 grains each) after meals. This treatment, however, availed but little, and it was quite evident that she had probably atrophy of the gastric tubules, with a consequent atonic dyspepsia. As her strength was failing from inability to assimilate food, the treatment previously mentioned was discontinued, and she was placed on Gray's Glycerine Tonic Comp., 2 drachms, four times daily. Her appetite improved almost immediately, and she was able to eat and digest moderate amounts of ordinary food. The most striking improvements noted were increased strength and amelioration of her general condition. After eight-weeks' treatment she is in remarkably good health. On the theory that gentle tonic and stimulant treatment is necessary because of her age, she is still taking the tonic.

From a review of the foregoing cases it seems the following conclusions are warranted:

1. The remedy in question is an efficient stomachic; it engenders appetite, facilitates digestion, promotes the assimilation of food, and overcomes atonic conditions of the mucous membrane and muscular coat of the stomach.
2. Because of its power of increasing assimilation of food, it is a valuable adjunct to the treatment of general debility, anæmia, and nervous exhaustion.
3. It checks fermentation in the stomach and stimulates inactive gastric functions; hence its value in selected cases of chronic gastric catarrh, associated with fermentation and deficient motor and secretory powers of the stomach.

ABSTRACT.

THE PRESCRIPTION IS SACRED.

If a man wishes to have his rights acknowledged and respected, he must show that he is determined to maintain and defend them. The

doctor and the druggist stand in a relation of reciprocal benefit to each other. The doctor prescribes medicines, and the druggist furnishes them. The doctor orders such remedies as his judgment and experience deem best in a given case. The druggist has no discretion in the matter. It is his duty to fill the prescription just as it comes into his hands, and on no account should he be guilty of such treason and disloyalty, as to try and induce the patient to accept a substitute for the remedy prescribed by the physician, or try to palm off a cheap and worthless imitation.

The prescription is sacred. It embodies the results of much observation and study. It is the instrument by which the doctor's knowledge is to restore health in a body suffering from disease. It is the means by which the doctor earns his living, and makes his reputation. The welfare of the doctor and the welfare of his patient, make it essential that the prescription shall not be tampered with. It must be filled with the specified drugs, and dispensed according to the written directions. Unless the druggist will respect the prescription, and be loyal to the Doctor who issues it, the element of chance will work havoc in the progress of therapeutics as a science.

But can the druggist be taught the sanctity of the prescription? Many physicians, made cynical by experience, are skeptics, and prefer to eliminate the element of doubt by furnishing their own medicines. But the druggist will cease tampering with prescriptions, and meddling between doctor and patient, when he sees that the doctor is determined that he shall do so, or go out of business. A doctor who is wide-awake, alert, and vigilant to see that his interests are protected, and his instructions carried out, will receive good service. Morality, like everything else, is taught by necessity, and the doctor who desires to be a success, professionally and financially, must lay upon the druggist the necessity of furnishing the exact remedies ordered in the prescription, on penalty of having his dishonest methods published.—Editorial, *Medical Brief*, July, '99.

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URETERAL ANASTOMOSIS.*

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To facilitate analysis this subject has been divided into two classes, viz.: ureteral anastomosis and ureteral implantation. The first embraces all end-to-end and end-to-side union of the ureter; the second, transplantation of the ureter and burying of its extremity into the bladder or other hollow viscera of the abdomen. These expressions have been selected on account of their simplicity, which makes them fittingly applicable.

Prior to 1886 I find no record of success in work of this kind. In that year, however, Schopf cut a ureter in removing a cyst of the broad ligament. He made a successful end-to-end union with fine silk sutures, displaying originality and ability in successfully coping with so formidable an accident.

Four years later, 1890, Hochenegg made a resection of the ureter in doing a hysterectomy for cancer, but happily joined the ends. His patient had a fatal hæmorrhage on the twentieth day.

In 1891-92 Fritsch followed with a successful case. The next year Kelly mistook the ureter for an enlarged vein, ligated and severed it, but united it end-to-side, after Van Hook's method, thus doing the first successful case in America.

Cushing followed in 1893, but using a deficiency of sutures (three), had leakage. His patient subsequently recovered.

Taufer did two cases, 1893 and 1894. The first was cut in removing intraligamentous cyst; the second was severed by mistaking a bluish tumefaction for a tumor. He united them end-to-end on a seg-

* Read before Southern Surgical and Gynæcological Association, at Memphis, Tenn., December, 1898.

ment of catheter to which a string was attached for the purpose of removing it before tying the last three sutures.

Emmet (B.) cut the ureter while removing a tumor in the lumbar region, and prepared it by the Van Hook method. This is the highest point at which anastomosis has ever been done.

Doherty did the Van Hook operation in 1895.(?) Robinson (Mayo) had success in splitting the lower segment and invaginating the upper into it.

Bovée, April 20, 1896, cut the ends obliquely and made careful coaptation by close stitching with small sutures. Over these he introduced longer ones to relieve the tension.

July 2, 1898, the writer ligated the ureter with the ovarian vessels and Fallopian tube in a case of large extraperitoneal fibroma. This was the very first ligature applied in doing the hysterectomy. The bladder end was split about three-eighths of an inch, as much of the mucous membrane as could be drawn out was cut away; then the upper or kidney end of the ureter was invaginated into it, using a mattress suture for the purpose. The split was then closed with fine sutures, making a snugly fitting cuff around the opposing end, with no muscosa intervening. Small silk was used to stitch the raw edge of the inferior segment around and to the sides of the upper section. A peritoneal cuff was thrown around the joint thus made, and the ureter buried behind the peritonæum. The entire work was conducted with the aid of a ureteral catheter, which had been introduced through the ureter into the bladder and drawn out of the urethra with a pair of forceps. The upper end was passed into the kidney end of the ureter. This served a great purpose, the entire manipulation being greatly facilitated by it. It also prevented obstruction of the ureter by crowding down the cut end of the musosa just below the line of union. This woman suffered from absorption of pus for a number of weeks from double pyosalpinx, was emaciated and thoroughly septic. Her temperature just before going upon the table was 103°, and had been running equally as high for the time she had been in the hospital, and perhaps longer. Her pulse was 130 per minute, weak, and thready. Thus this anastomosis was done with unfavorable conditions, but with success.

In October, 1898, the writer did a successful resection of the left ureter in a case of extraperitoneal extension of sarcoma of the ovary. About one and a half inches of the duct was removed and ends united as above, the peritonæum being stripped from the entire left half of the pelvis. The bladder was separated from the upper portion of the

vagina and the horizontal rami of the pubic bones and drawn up to the left ileopectinal line to cover over or bury the ureter, and there fastened with silk sutures. In this instance the ureteral catheter was introduced on the stylet, and being thus stiffened it passed directly out of the urethra from the ureter, thus dispensing with the use of forceps to fish it out of the bladder. Abdominal and vaginal gauze drains were employed; no leakage.

The twelve cases of urethral anastomosis were ultimately successful. One had leakage, but finally recovered.

Schopf's case lived seven weeks; Hochenegg's died on the twenty-first day, but the autopsies proved both cases to have had successful union of the cut ureters.

The twelve cases were what I have termed primary operations—that is, the ducts were repaired at the time of the injury. Secondary operations for anastomosis are impracticable on account of shrinkage of the distal end, which naturally follows disuse of that segment; therefore, no operations of this character have been accounted.

Theoretically, Van Hook's operation is the simplest and safest, but



Fig. 1.—Simple end-to-end or butt union.

it is difficult to execute in a normal ureter. It also requires about a half-inch more in length of the ureter than the end-splitting, as done by Robinson and modified by the writer, or that of oblique union, after Bovée. The only case of leakage reported was one of simple end-to-end or butt union; all the invaginations, whether end-to-end or end-to-side, made perfect recoveries. Any of them may be greatly facilitated by the use of the catheter, as it steadies the delicate duct, and it gives to this work that which the "hollow keck" of Thomas Bryan or the Murphy button gave to intestinal anastomosis. Invagination is less likely to result in leakage than the end-to-end union, whether transverse or oblique. There seems to be no common method of operating applicable to all cases, the conditions existing in one may so modify its requirements that the method used in it would not apply to another or simpler one; it is, therefore, useless to attempt to draw hard-and-fast rules, but to incline to the general principles to be obtained; thus, there are several features necessary to success aside from thorough asepsis.

First, perfect coaptation or invagination; this must be done in such a way that no mucous membrane can slip between the two ends of the ureter. Second, the urethral artery should be preserved in its continuity to the ends of the ureter. Serious injury to this vessel will cause the ureter to perish beyond the point where it ceases to receive its blood-supply. Dr. Kelly reports a fistula following a very careful dissection of some malignant glands off the ureter with catheter introduced, saying he must have cut the ureter. The chances are that in the dissection the ureteral artery was injured, consequently the ureter sloughed, for it was not at all probable that it was injured when so prominent and clearly outlined as it is made by the catheter. The ends of the ureter, therefore, should be cut back to the point where the artery is intact, lest underdiminished blood-supply and tension should cause it to slough. Third, all strain and tension must be relieved. Should union occur by first intention, the parts will separate as soon as the sutures cut out or release them, as will be seen later on. Fourth, there must be no obstruction to the flow of urine.

Implantation.—There have been seventeen cases of implantation of



Fig. 2.—Ends obliquely joined. After Bovée.

the ureter into the bladder and one into the pelvis of the kidney. This operation is more recent than that of anastomosis by six years. Baumm did the first in 1892, making the sacrococcygeal incision. His case had double ureter with congenital fistula. Navaro, in 1893, cut a displaced ureter, but stitched it into the bladder. His case had leakage, but ultimately recovered. Krug, 1894, did the first American implantation. He cut the ureter in an abdominal hysterectomy for carcinoma uteri. Penrose published in 1894 (private communication says 1893) his case of resection of an inch of the ureter for carcinoma uteri.

Westermarck, May 2, 1894, did the sacrococcygeal operation, resecting the ureter and stitching the same into the bladder. Abbe's case, August, 1894, was not a true implantation. He attempted to remove a foul pouch or abscess, but finding the ureter involved, desisted, stitching it to this diverticulum of the bladder. Krouse, in the summer of 1894, did the secondary operation for fistula following vaginal hysterectomy. He used tension sutures, bringing them out of the

urethra. Kelley did implantation in October, 1894. Boldt, October 10, 1895, did the secondary operation for fistula, leaving the catheter in the ureter to give it support.

December, 1895, Baldy inadvertently lacerated a ureter in removing a tubo-ovarian mass involving an inflamed and softened broad ligament. He implanted the ureter into the bladder and, releasing the viscus from its attachment to the horizontal rami of the pubic bone, tacked it to the pelvic wall at the ileopectinal line (private communication). Polk, January 26, 1896, resected the right ureter in an abdominal hysterectomy for cancer. He made the implantation, but had leakage. His case ultimately recovered, but subsequently died of cancer. He secured the specimen, which showed a contraction of the ureteral outlet and hydro-ureter.

January, 1896, the writer did the implantation for severed ureter. It was included in the ligature of the left ovarian artery. This is the



Fig. 3.—The Principle of Van Hook's operation.

fourth instance in which the ureter was displaced to this extreme point and tied with the ovarian vessels. O. Witzel, spring of 1896, did the secondary operation for fistula, transplanting the ureter extraperitonæal by a more direct or shorter route.

Anna M. Fullerton had a case of double ureter in which both were severed and implanted successfully, March 10, 1897.

Kelley, January 26, 1897, did Fritsch's operation, but failed on account of supervening pyelonephritis. At another time he endeavored to operate for fistula, and in order to determine which ureter was injured, catheterized, and, finding an obstruction, concluded that that side was injured, but it proved to be a strictured condition instead of a severed ureter, so he cut the wrong one in operating the second time upon the same case, and then had resulting two fistulæ instead of one. Later, they were relieved by a vaginal operation.

Fürth, 1897, cut the right ureter in abdominal hysterectomy for large fibroid tumor, but succeeded in implanting it into the bladder. The ureter was hidden in a mass of varicose veins and included in the ligature that secured them.

One other case was mentioned by H. T. Hanks (in discussion), but as it has not been published he could send me no data (private communication).

These have been divided into primary and secondary operations for the purpose of better consideration. In the first class (those that were repaired at the time of the injury) there were nine cases with one failure, and one case of leakage which finally recovered, thus giving an ultimate success of eight cases, or nearly 89 per cent. This one failure was due to tension exerted upon the ureter. The ninth day, when the bladder was allowed to fill with urine and assume its normally globular



Fig. 4.—End splitting and invagination employed by the writer.

shape, it pulled away from the ureter and caused leakage. The bladder in this case had been stripped from its attachment to the horizontal rami of the pubic bones and the upper portion of the vagina and anchored to the side of the pelvis. Everything went on well till the day above mentioned, when the removal of the permanent catheter caused this unhappy result. Thus there is some danger of failure in the released or displaced bladder. It is not a safe measure when it does not entirely relieve the tension upon the ureter. In such circumstances prolonged catheterization is needful. These results show a very high percentage of success.

The primary operation is easy of execution, so that if the ureter is long enough for implantation, and yet not cut too low in the pelvis for ureteral anastomosis, implantation should be the elect of one who has

had no experience in the work, though anastomosis gives the best results in skilful hands.

There were eight secondary operations for implantation, resulting in three with leakage; six ultimate recoveries, and two complete failures giving a percentage of 75 per cent., which is a remarkable showing for this very trying kind of surgery. Two were "partial success," but ultimately recovered. The secondary operation is a much more formidable undertaking. The peri-ureteritis, exudate, scar tissue, and false passages render the work one of exceeding difficulty, as every available centimeter of the ureter must be preserved. Difficult dissection may cause one to desist and cut the tube too short for implantation. The skilful hand of Kelly has had two failures, and he abandoned the operation in two other cases. According to his experience, there is an uncertainty in the reliability of the catheter as a guide, he fearing to use it in the fistulous opening lest infection of the ureter and kidneys result from it. He attempted to make a diagnosis of the ureter involved by searching out a healthy or uninjured one per urethram, but, encountering an obstacle in the ureter about the base of the broad ligament, he concluded that it must be the injured one. Accordingly, the wrong ureter was cut in the operation and engrafted into the bladder, but failed. Perhaps filiform bougies might have prevented this error; or if he had not been satisfied with examining one side, but had also examined the other, he would then have discovered that obstruction existed in both, in which case the filiform might have been called into use for the purpose of differentiation. The urethral catheter, though dangerous, is a valuable aid to diagnosis, and is invaluable in this class of work, but should be used by skilful hands and with strict aseptic precaution, as death has followed its introduction into a fistula.

The details of fixing the ureter into the bladder varied so greatly that it is difficult to make a comparison of the relative merits of each. When tension sutures were used, or the ureter split and stitched to the bladder at the sides of the incision, no leakage occurred. In cases where the character of sutures are not mentioned, there are three with leakage. Krouse brought threads out of the ureter to prevent the strain from dragging on the bladder, while Boldt let the catheter remain to give the ureter support. So it is difficult to draw a satisfactory conclusion. Perhaps preference should be given to the Van Hook method. Drainage is useless when the work is well done, unless there is some tension upon the ureter, when it will aid in fistula formation and saving the life of the patient in case of failure. It should be gauze freely applied and brought through the vagina. In anastomosis of the

ureter high up it should be inserted above the pelvic brim. With drainage there is a liability of infecting the sutures, so it should not be placed directly upon them, but in close proximity. It is, however, a misfortune that prompts its use, for if coaptation is good, no strain upon the ureter and no infection in the wound, it is unnecessary and is liable to encourage failure by permitting infection. It was used in six of the seventeen cases of implantation, and leakage occurred in four of them. In no case where drainage was omitted has leakage occurred. It does not follow that gauze drainage is the cause of all failures, but the percentage is so great it cannot be passed without notice. Upon the other hand, no operator is apt to drain if he feels satisfied with his work. So it is presumed the drainage cases were bad ones.

Stricture of the cut end does occur, as has been shown by Polk's specimen. Cystoscopic examinations have been made in many cases, and no tendency to stricture reported. But such examinations are not thoroughly reliable. Doubtless Polk's case would have shown no tendency to stricture if it had been examined by the cystoscope, but when removed from the body the stricture and hydro-ureter were self-evident facts. To prevent this, either splitting the duct or obliquely cutting the end will suffice. Perhaps the latter is better, on account of the tendency of the split to close by granulation. But little harm can come from strictures thus formed unless they are exceedingly tight, for in ordinary conditions the urine is secreted so slowly that very small apertures will suffice for its escape. While the urine enters the bladder by hydrostatic force as well as by contraction of the ureter, this force may be overcome by complete obstruction temporarily existing in or at the ends of the ureters. Excessive distention of the bladder alone will not suffice to create this condition; it necessitates some adjuvant which is not infrequently found in kinking of the ureter from adhesions or fixation by exudate thrown out in the process of inflammation. When existing, this condition of affairs will fix or hold immobile a section of the ureter, while the lower extremity may be drawn upward, producing an acute angle and obstructing the flow of urine at the point of fixation. Again, hydro-ureter follows compression by malignant growths in the broad ligaments. The writer saw double hydro-ureter produced by obstruction of the patulous ends of the ureters in a case of loss of the base of the bladder (vesico-vaginal fistula). Intra-abdominal pressure crowded the upper portions of the bladder into the fistula, effectually shutting off the escape of urine from the ureter.

With the exception of two instances the ureter was buried extra-peritonæally, which no doubt is the safest method. In one case the

total operation was extraperitonæal; it failed, however, on account of death from pyelonephritis (Kelly). This method (Fritsch's) is the ideal for the secondary operation of implantation, the only objection being the exposure of the iliac vessels to the danger of an infected wound in case the operator should be unfortunate. In clean wounds it does not appear to add any material risks to strip these vessels of fatty tissue and peritonæum, for several times in removing enormous extraperitonæal tumors I have exposed the external and internal iliac vessels their full length without injury.

In addition to the above there was one implantation into the pelvis of the kidney, the highest point at which ureteral surgery can be done. This case will be recognized as the brilliant resection of a strictured upper extremity of a ureter by Küster. Though the primary result was not a complete success, on account of leakage, he effected a cure by subsequently closing the fistula.

Of the total number of operations (thirty), including Küster's, there were three failures, or 10 per cent., which is a remarkably good showing in such new work, especially of an organ that a decade ago was considered beyond the reach of the surgeon's skill. This estimate is fair, for there can have been but a few operations not reported, unless failure has dampened the ardor of the operators; but silence of this character does not pertain to this operation alone. These figures, so far as statistics go, are as good as any, for the work has been confined to skilful hands and honest men.

Success has nearly banished the practice of nephrectomy in injuries of the ureter, as those of you who have advocated it six years ago at Louisville show by your radical change of views. The merits of each case must decide the operation best fitted for its repair. If a primary operation, the point at which the ureter is cut will probably decide it. High injuries preclude implantation and tend to make anastomosis easy; those inflicted at a point very low down or close to the bladder render anastomosis difficult and favor implantation. Between these there is a line of demarcation not well defined that will allow of some latitude of selection, so that the operation easiest to accomplish should be done. When a long section has been removed it renders it either impracticable or the problem a vexed one. Fortunately, such cases must be rare, for the disposition of the proximal ureter then becomes a serious question. Intestinal implantation has its dangers and discomforts. Skin implantation means all the distress of repulsive fistula, though it affords ample time for reflection. Switching it across to the opposite ureter is probably practicable only when there is

IMPLANTATION INTO BLADDER

Operator.	Date.	Bibliography.	Cause.	Primary or Second-ary.	Incision.	Operation.	Extra- or Intra-perit.	Drain- age.	Leak- age.	Result.	Remarks.
1 Baumm.	1892.	Centralbl. für Gynäk., 1892, No. 17, p. 336.	Congenital double ure- ter fistula.	Prim- ary.	Sacro- coccy- geal.	Stitched in bladder.	Extra- perit.	None.	None.	Success.	.....
2 Navaro.	1892.	Ibid., No. 27, 1893.	Vag. hyst.	Second- ary.	Abd. into perit.	Stitched to incision in bladder.	Intra- perit.	Gauze, abd.	None.	Partial success. Final success.	Length of blad- der incision, $1\frac{1}{2}$ centimetres.
3 Krug, F.	Spring, 1894.	Amer. Gynec. and Obstet. Journ., N.Y., 1894, pp. 495-497.	Abd. hyst. fibroid dis- placed ure- ter.	Prim- ary.	Abd. into perit.	Stitched in bladder; end of ureter split; bladder closed by sur- perimposed layers of sutures.	.....	None.	None.	Success.	Length of blad- der incision, $1\frac{1}{2}$ centimetres.
4 Penrose, C. B. July, 1893.	Spring, 1894.	Med. News, Phila., April 28, 1894, p. 470.	Abd. hyst. card noma uteri.	Prim- ary.	Abd. into perit.	Abd. hyst.; resected about an inch of left ureter. Van Hook's method.	.....	None.	None.	Success.	.....
5 Wisternmark, F.	May 2, 1894.	Centralbl. für Gynäk., 1895, No. 7, Vol. xix.	Sacro-coc- cyst; card- noma ute- rus and ure- ter.	Prim- ary.	Sacro- coccy- geal.	After hyst.; resection ureter; stitched in bladder.	Extra- perit.	Gauze.	None.	Success.	.....
6 Abbe.	Aug., 1894.	Ann. Surg., August 1894, p. 183.	Lacerated while oper- ating on ab- scess.	Second- ary.	Kraake.	Failed to remove pouch, so anat- omized ureter into it.	Extra- perit.	.....	None.	Success.	.....
7 Krause.	Sum'er 1894.	Centralbl. für Chirur., 1895, No. 9, p. 220.	Vag. hyst. fistula.	Second- ary.	Abd. into perit.	Implantation into bladder; tension threads drawn out through urethra.	.....	.....	None.	Success.	.....

8 Kelly.	Oct., 1894.	Bull. Johns Hopkins Hospital, Feb., 1895.	Vag. hyst. fistula.	Second-ary.	Abd. into perit.	Van Hook. Ureter short; bladder loosened from peritoneal attachments; under surface of ureter split.	Intra-perit.	Gauze.	None.	Success.	.....
9 Boldt.	Oct. 10, 1895.	Amer. Journ. Obstet., N.Y., 1896, Vol. xxxiii, p. 884.	Vag. hyst. fistula.	Second-ary.	Abd. into perit.	Catheter inserted through fistula, ureter dissected and implanted in bladder; catheter is <i>in situ</i> , and projecting through urethra.	Extra-perit.	.....	None.	Success.	Three stitches. Boldt also had long fistulous track from brim pelvis—nephrectomy.
10 Baldy.	Dec., 1895.	Amer. Journ. Obstet., 1896, No. 3, Vol. xxxiii.	Divided ureter in encysting tubo-ovarian mass in which bd. ligament destroyed by inflam. process.	Prim-ary.	Abd. into perit.	Implantation into bladder; two lateral sutures, ureter to bladder; bladder tacked to pelvic wall at ilio-pectoneal line (<i>s</i>).	Extra-perit.	Glass.	None.	Success.	Length of bladder incision, 1 in. Bladder released from peritoneal attachments. (Private communication.)
11 Polk.	Jan. 26, 1896.	Amer. Gyn. and Obstet. Journ., Feb., 1892, No. 2.	Abd. hyst. carcinoma uterus and ureter.	Prim-ary.	Abd. into perit.	Resect. r. ureter for 1 in.; implantation.	.....	Gauze.	Leakage.	Partial success. Final success.	Constriction shown pt.-mort. one year after at bladder insertion.
12 Noble, G. H.	Jan., 1896.	Grady Hosp., Atlanta.	Abd. hyst. displaced ureter; ligated with ovarian ends.	Prim-ary.	Abd. into perit.	Implantation by forceps through urethra; 3 inches resected; ureter too short; bladder released; Kelly method.	Extra-perit.	Gauze, abd. and vag.	None.	.....	Ninth day bladder allowed to fill up with urine; ureter pulled out; urinary infection; uræmia, etc.

IMPLANTATION INTO BLADDER.—Continued.

Operator.	Date.	Bibliography.	Cause.	Primary or Secondary.	Incision.	Operation.	Extra- or Intra-perit.	Drainage.	Leakage.	Result.	Remarks.
13 Witzel, O.	Spring, 1896.	Kelly's Gyn.	.....	Secondary.	Abd. into perit.	Ureter transferred to side of pelvis above ilio-pectoneal line to shorten route; end cut oblique; segment of ureter buried in bladder wall.	Extra-perit.	.....	None.	Success.	.....
14 Fullerton, Anna M.	Mar. 10, 1897.	Kelly's Gyn. and Amer. Gyn. and Obstet. Journ.	Abd. hyst. fibroid; displaced ureter; double; cut a little below Fallopian tube.	Primary.	Abd. into perit.	Double ureter; both ends implanted into the incision in bladder.	Extra-perit.	.....	None.	Success.	Double ureter; both transplanted.
15 Fûth, R.	1897.	Inaug. Diss., Strassburg, 1898. Graeupner, of large myoma, tumor Centralbl. für Gynäk., July 16, 1898.	Abd. hyst. cut r. u. on post. surface of large myoma, tumor ligated in bundle of veins.	Primary.	Abd. into perit.	Implantation into bladder.	Extra-perit.	None.	None.	Success.	.....
16 Kelly.	Jan. 26, 1898.	Amer. Gyn. and Obstet. Journ., June, 1898, pp. 739, 740.	Fistula.	Secondary.	Inguinal. Fritch.	Inguinal incision; extra-peritoneal; peritonæum lacerated in two places; pyeloneph. ureter split on dorsum; gauze in bladder removed and new drain put in vagina.	Extra-perit.	Gauze accidentally forced through bladder.	None.	Failure.	Pyelonephritis.

	Kelly.	Not given.	Ibid.	Abd. hyst. carcinoma; injured ureter and fistula; catheter in ureter.	Secondary.	Abd. into perit.	Attempted to implant ureter, but cut the wrong one on account of stricture or obstruction to catheter; too weak to operate on other ureter.	.....	None.	Leakage.	Failure.	Having cut the wrong ureter, and that failing, two fistulae were thus formed; this case was afterward closed by vaginal operation.
17	Kelly.	Not given.	Ibid.	Abd. hyst. carcinoma; injured ureter and fistula; catheter in ureter.	Secondary.	Abd. into perit.	Attempted to implant ureter, but cut the wrong one on account of stricture or obstruction to catheter; too weak to operate on other ureter.	.....	None.	Leakage.	Failure.	Having cut the wrong ureter, and that failing, two fistulae were thus formed; this case was afterward closed by vaginal operation.

IMPLANTATION INTO PELVIS OF KIDNEY.												
	Kuster.	1892.	Archiv für klin. Chir., 1892, xlv, Heft 4, p. 890.	Fistula after lumbar nephrotomy; vesicle anuria.	Primary.	Lumbar.	Resection of strictured portion of ureter close to pelvis of kidney and implantation of ureters in same.	Extra-perit.	.....	Leakage. 4 mos. subsequent op. for fistula	Success.	This is the highest point at which repair of the ureter has ever been done.
1	Schopf.	June 2, 1886.	Allgemeine Wiener Med. Zeitsch., 1886; Centralbl. für Gynäk., No. 39, 1887.	Cut in removing cyst; b. i. displaced ureter.	Primary.	Abdominal.	Ended fastened and united by 8 sutures through all but mucosa.	Extra.	None.	None.	Success.	Eight stitches. Died of tuberculosis seven weeks later.
2	Hochenegg.	Feb. 9, 1890.	Wiener klin. Wochens., 1893, vi, pp. 745-755, 872, 864.	Cancer of uterus.	Primary.	Abdominal.	Resected left ureter and bladder; ends of ureter sutured end to end; bladder closed; twentieth day hemorrhage.	Extra.	None.	None.	Died 20th day hemorrhage.	At autopsy ureter intact, and this case seems to be classed as a success.

IMPLANTATION INTO BLADDER.—Continued.

Operator.	Date.	Bibliography.	Cause.	Primary or Secondary.	Incision.	Operation.	Extra- or Intra-perit.	Drainage.	Leakage.	Result.	Remarks.
13 Witzel, O.	Spring, 1896.	Kelly's Gyn.	.....	Secondary.	Abd. into perit.	Ureter transferred to side of pelvis above ilio-pectoneal line to shorten route; end cut oblique; segment of ureter buried in bladder wall.	Extra-perit.	.....	None.	Success.	.....
14 Fullerton, Anna M.	Mar. 10, 1897.	Kelly's Gyn. and Amer. Gyn. and Obstet. Journ.	Abd. hyst. fibroid; displaced ureter; double; cut a little below Fallopian tube.	Primary.	Abd. into perit.	Double ureter; both ends implanted into the incision in bladder.	Extra-perit.	.....	None.	Success.	Double ureter; both transplanted.
15 Füh, R.	1897.	Inaug. Diss., Strassburg, 1898. Graeupner, 1898. Centralbl. für Gynäk., July 16, 1898.	Abd. hyst. cut r. u. on post. surface of large myoma, tumor ligated in bundle of veins.	Primary.	Abd. into perit.	Implantation into bladder.	Extra-perit.	None.	None.	Success.	.....
16 Kelly.	Jan. 26, 1898.	Amer. Gyn. and Obstet. Journ., June, 1898, pp. 739, 740.	Fistula.	Secondary.	Inguinal. Fritch.	Inguinal incision; extra-peritoneal; peritonæum lacerated in two places; pyeloneph. ureter split on dorsum; gauze in bladder removed and new drain put in vagina.	Extra-perit.	Gauze accidentally forced through bladder.	None.	Failure.	Pyelonephritis.

17 Kelly.	Not given.	Ibid.	Abd. hyst. carcinoma; injured ureter and fistula; catheter in ureter.	Second-Abd. into perit.	Attempted to implant ureter, but cut the wrong one on account of stricture or obstruction to catheter; too weak to operate on other ureter.	None.	Leak. Failure. age.	Having cut the wrong ureter, two fistulae were thus formed; this case was afterward closed by vaginal operation.
Kuster.	1894.	Archib. M. R. M. Chitt. 1894. 1894. 1894. 1894.	Fistula at 10 cm. from ureter.	Palm.	Prosection of abdomen and position of ureter above top of kidney. Ureter 4 cm. long. Ureter 10 cm. long.	Fistula.	Leak. age. 10 days. 10 days. 10 days. 10 days.	Success. This is the highest point at which the ureter has been anastomosed.
A. S. Kelly.	1894.	Archib. M. R. M. Chitt. 1894. 1894. 1894. 1894.	Fistula at 10 cm. from ureter.	Palm.	Fistula. 10 cm. long. 10 cm. long. 10 cm. long. 10 cm. long.	Fistula.	Leak. age. 10 days. 10 days. 10 days. 10 days.	Success. This is the highest point at which the ureter has been anastomosed.
H. S. Kelly.	1894.	Archib. M. R. M. Chitt. 1894. 1894. 1894. 1894.	Fistula at 10 cm. from ureter.	Palm.	Fistula. 10 cm. long. 10 cm. long. 10 cm. long. 10 cm. long.	Fistula.	Leak. age. 10 days. 10 days. 10 days. 10 days.	Success. This is the highest point at which the ureter has been anastomosed.

URETERAL ANASTOMOSIS.—Continued.

Operator.	Date.	Bibliography.	Cause.	Primary or Second-ary.	Incision.	Operation.	Extra- or Intra-perit.	Drain- age.	Leak- age.	Result.	Remarks.
3 Fritsch.	1891-1892.	Ueber die gyn-äkologischen Operationen des Jahrgangs, 1891-92. Berlin, 1895, 8vo., p. 287.	Operation for tumor of abdomen.	Prim-ary.	Abdom-inal.	Stitched ends with fine intestinal sutures.	Extra.	.....	None.	Success.	.....
4 Kelly.	May 1, 1892-1893.	Bull. Johns Hopkins Hospital, 1893, iv, p. 89.	Hysteromyo-mectomy, mistaken ureter for large vein.	Prim-ary.	Abdom-inal.	Van Hook's anastomosis.	Extra.	Gauze.	None.	Success.	.....
5 Cushing.	1893.	Ann. Gynec. and Pediatrics, 1893, vi, p. 277.	Intralig. myoma displaced ureter.	Prim-ary.	Abdom-inal.	Ends united; two silk one catgut suture.	.....	.....	Leak- age for two weeks.	Success.	Patient well two years later.
6 Tauffer.	1893.	Pest med. Chir. Presse, Budapest, 1893.	Cut intraligamentous cyst.	Prim-ary.	Abdom-inal.	End to end on segment of catheter No. 8, which was removed before trying last three stitches.	.....	Vaginal and glass abdom.	None.	Success.	.....
7 Tauffer.	1894.	Archiv für Gynäk., 1894, Band xlv, Heft 3, p. 231.	Extra-perit. tumor; bluish mass mistaken for tumor and incised.	Prim-ary.	Abdom-inal.	Operation as above.	.....	Same.	.....	Success.	.....
8 Emmet, B.	Nov. 22, 1894.	Amer. Journ. of Obst., 1895, xxxi, pp. 449-464.	Cut in removal of tumor in lumbar region.	Prim-ary.	Lumbar.	Van Hook method.	.....	None.	.....	Success.	Highest point at which anastomosis has been done.

9	Doherty.	1895.	Van Hook in Journ. Amer. Med. Assoc., 1895, xxv, 843.	Cut in abdominal section.	Prim-ary.	Abdom-inal.	Van Hook.	.....	.....	.....	Success.	.....
10	Robson (Mayo).	1896.	Internat. Med. Annual, 1896, p. 602.	Extra-peritomyoma; removed 2 in. of ureter.	Prim-ary.	Abdom-inal.	Splitting lower end, invaginating.	.....	.....	.....	Success.	.....
11	Bovée.	Apr. 20, 1896.	Reprint Ann. of Surgery, Jan., 1897.	Tubo-ovarian abscess; ureter caught in ligature of ovarian vessels on right.	Prim-ary.	Abdom-inal.	End cut obliquely and ditch closed with fine silk and tension sutures over these.	.....	.....	.....	Success.	.....
12	Noble, G. H.	July 2, 1898.	Grady Hospital.	Displaced ureter ligated and cut with ovarian vessels, Fallopian tube right side; very large intralig. fibroid.	Prim-ary.	Abdom-inal.	End to end; split lower end, pushed down mucosa, and inserted kidney, end stitched over split and made peritoneal cuff; all done on urethral catheter. Patient in extreme condition, having had for weeks high temp. and feeble pulse. At time of operation pulse 160.	Extra.	None.	.....	Success.	Multiple fibroid extra-perito. or intra-lig.; emaciated; contin'd high temp.; feeble, rapid pulse; temp. 103° just before operation; pulse went up during operation to 160 at time of anastomosis; urethral catheter kept in 12 hours.
13	Noble, G. H.	Oct., 1898.	P. I.	Resect. left ureter, saccoma intra-lig. of left ovary.	Prim-ary.	Abdom-inal.	End to end as above. Peritoneum stripped from pelvis to above brim and from sacrum tumor dissect'd down behind vagina to floor of pelvis and around outer side and behind rectum and sigmoid; iliac vessels laid bare in operation.	.....	None.	.....	Success.	Malignant.

URETERAL ANASTOMOSIS.—Continued.

Operator.	Date.	Bibliography.	Cause.	Primary or Secondary.	Incision.	Operation.	Extra- or Intra-perit.	Drainage.	Leakage.	Result.	Remarks.
3 Fritsch.	1891-1892.	Ueber die gynäkologischen Operationen des Jahres 1891-92. Berlin, 1895, 8vo., p. 287.	Operation for tumor of abdomen.	Primary.	Abdominal.	Stitched ends with fine intestinal sutures.	Extra.	.....	None.	Success.	.....
4 Kelly.	May 1, 1892-1893.	Bull. Johns Hopkins Hospital, 1893, iv, p. 89.	Hysteromyomectomy, mistaken for ureter for large vein.	Primary.	Abdominal.	Van Hook's anastomosis.	Extra.	Gauze.	None.	Success.
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6 Tauffer.	1893.	Pest med. Chir. Presse, Budapest, 1893.	Cut intraligamentous cyst.	Primary.	Abdominal.	End to end on segment of catheter No. 8, which was removed before trying last three stitches.	Vaginal and glass abdom.	None.	Success.
7 Tauffer.	1894.	Archiv für Gynäk., 1894, Band xvi, Heft 3, p. 231.	Extra-perit. tumor; bluish mass mistaken for tumor and incised.	Primary.	Abdominal.	Operation as above.	.....	Same.	.....	Success.	.....
8 Emmet, B.	Nov. 22, 1894.	Amer. Journ. of Obst., 1895, xxxi, pp. 449-464.	Cut in removal of tumor in lumbar region.	Primary.	Lumbar.	Van Hook method.	.....	None.	.....	Success.	Highest point at which anastomosis has been done.

9	Doherty.	1895.	Van Hook in Journ. Amer. Med. Assoc., 1895, xxv, 843.	Cut in abdominal section.	Primary.	Abdominal.	Van Hook.	Success.
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URETERAL ANASTOMOSIS.—Continued.

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6 Tauffer.	1893.	Pest med. Chir. Presse, Budapest, 1893.	Cut intraligamentous cyst.	Primary.	Abdominal.	End to end on segment of catheter No. 8, which was removed before trying last three stitches.	Vaginal and glass abdom.	None.	Success.
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9	Doherty.	1895.	Van Hook in Journ. Amer. Med. Assoc., 1895, xiv, 843.	Cut in abdominal section.	Primary.	Abdominal.	Van Hook.	Success.
10	Robson (Mayo).	1896.	Internat. Med. Annual, 1896, p. 602.	Extra-peritoneal; removed 2 in. of ureter.	Primary.	Abdominal.	Splitting lower end, invaginating.	.....	.....	.....	Success.	.....
11	Bovée.	Apr. 20, 1896.	Reprint Ann. of Surgery, Jan., 1897.	Tubo-ovarian abscess; ureter caught in ligature of ovarian vessels on right.	Primary.	Abdominal.	End cut obliquely and ditch closed with fine silk and tension sutures over these.	.....	.....	.....	Success.	.....
12	Noble, G. H.	July 2, 1898.	Grady Hospital.	Displaced ureter ligated and cut with ovarian vessels, Fallopian tube right side; very large intraligamentary fibroid.	Primary.	Abdominal.	End to end; split lower end, pushed down mucosa, and inserted kidney, end stitched over split and made peritoneal cuff; all done on urethral catheter. Patient in extreme condition, having had for weeks high temp. and feeble pulse. At time of operation pulse 160.	Extra.	None.	.....	Success.	Multiple fibroid extra-peritoneal; emaciated; continued high temp.; feeble, rapid pulse; temp. 103° just before operation; pulse went up during operation to 160 at time of anastomosis; urethral catheter kept in 12 hours.
13	Noble, G. H.	Oct., 1898.	P. I.	Resect. left ureter, saccoma intra-lig. of left ovary.	Primary.	Abdominal.	End to end as above. Peritoneum stripped from pelvis to above brim and from sacrum tumor dissected down behind vagina to floor of pelvis and around outer side and behind rectum and sigmoid; iliac vessels laid bare in operation.	.....	None.	.....	Success.	Malignant.

URTERAL ANASTOMOSIS.—Continued.

Operator.	Date.	Bibliography.	Cause.	Primary or Secondary.	Incision.	Operation.	Extra- or Intra-perit.	Drainage.	Leakage.	Result.	Remarks.
3 Fritsch.	1891-1892.	Ueber die gynäkologischen Operationen des Jahres, 1891-92. Berlin, 1895, 8vo., p. 287.	Operation for tumor of abdomen.	Primary.	Abdominal.	Stitched ends with fine intestinal sutures.	Extra.	.....	None.	Success.	.....
4 Kelly.	May 1, 1892-1893.	Bull. Johns Hopkins Hospital, 1893, iv, p. 89.	Hysteromyomectomy, mistook ureter for large vein.	Primary.	Abdominal.	Van Hook's anastomosis.	Extra.	Gauze.	None.	Success.	.....
5 Cushing.	1893.	Ann. Gynec. and Pediatrics, 1893, vi, p. 277.	Intralig. myoma displaced ureter.	Primary.	Abdominal.	Ends united; two silk one catgut suture.	.....	.....	Leakage for two weeks.	Success.	Patient well two years later.
6 Tauffer.	1893.	Pest med. Chir. Presse, Budapest, 1893.	Cut intraligamentous cyst.	Primary.	Abdominal.	End to end on segment of catheter No. 8, which was removed before trying last three stitches.	.....	Vaginal and glass abdom.	None.	Success.	.....
7 Tauffer.	1894.	Archiv für Gynäk., 1894, Band xiv, Heft 3, p. 231.	Extra-perit. tumor; bluish mass mistaken for tumor and incised.	Primary.	Abdominal.	Operation as above.	.....	Same.	.....	Success.	.....
8 Emmet, B.	Nov. 22, 1894.	Amer. Journ. of Obst., 1895, xxxi, pp. 449-464.	Cut in removal of tumor in lumbar region.	Primary.	Lumbar.	Van Hook method.	.....	None.	.....	Success.	Highest point at which anastomosis has been done.

9	Doherty.	1895.	Van Hook in Journ. Amer. Med. Assoc., 1895, xxv, 843.	Cut in abdominal section.	Primary.	Abdominal.	Van Hook.	.....	.....	.....	Success.	.....
10	Robson (Mayo).	1896.	Internat. Med. Annual, 1896, p. 602.	Extra-peritoneal; removed 2 in. of ureter.	Primary.	Abdominal.	Splitting lower end, invaginating.	.....	.....	.....	Success.	.....
11	Bovée.	Apr. 20, 1896.	Reprint Ann. of Surgery, Jan., 1897.	Tubo-ovarian abscess; ureter caught in ligature of ovarian vessels on right.	Primary.	Abdominal.	End cut obliquely and ditch closed with fine silk and tension sutures over these.	.....	.....	.....	Success.	.....
12	Noble, G. H.	July 2, 1898.	Grady Hospital.	Displaced ureter ligated and cut with ovarian vessels, Fallopian tube right side; very large intralig. fibroid.	Primary.	Abdominal.	End to end; split lower end, pushed down mucosa, and inserted kidney, end stitched over split and made peritoneal cuff; all done on urethral catheter. Patient in extreme condition, having had for weeks high temp. and feeble pulse. At time of operation pulse 160.	Extra.	None.	.....	Success.	Multiple fibroid extra-peritoneal; emaciated; continued high temp.; feeble, rapid pulse; temp. 103° just before operation; pulse went up during operation to 160 at time of anastomosis; urethral catheter kept in 12 hours.
13	Noble, G. H.	Oct., 1898.	P. I.	Resect. left ureter, saccoma intralig. of left ovary.	Primary.	Abdominal.	End to end as above; Peritoneum stripped from pelvis to above brim and from sacrum tumor dissected down behind vagina to floor of pelvis and around outer side and behind rectum and sigmoid; iliac vessels laid bare in operation.	.....	None.	.....	Success.	Malignant.

coexisting dilatation or hydro-ureter, as the forcible introduction of a tube larger than the ampulla, into which it is to go, is liable to obstruct the flow of urine from above the point of anastomosis. This might be overcome by giving the ureter to be transplanted an upward turn and anastomosing it to the wider portion of its fellow at the pelvis of the kidneys, or into the latter cavity, even if a lumbar incision is required. Implantation into the bladder will be requisite when the ureter is cut low down and in secondary operations for injuries of the inferior extremity of the ureter, for the cut-off portion becomes occluded or shrunken so that anastomosis into it is impracticable.

It will be observed that the consideration of other ureteral operations have been studiously avoided; many of them teem with brilliancy, such as the removal of foreign bodies and excision of the ureter. Of the first, Hall, of Cincinnati, claims the honor of one of these operations; in the latter Kelly has done brilliant work, being the first to remove the entire ureter in long sections, Reynier having done his by piecemeal. Vaginal operations are too numerous to mention, and do not come within the scope of this paper, the conditions being such that they are not applied to the same class of cases.

A noticeable feature is that with three exceptions each operator had but one case. Tauffer had two. The writer three, with one failure. Kelly published four, with two failures.

INVERSION OF THE UTERUS, WITH A REVIEW OF
THE VARIOUS OPERATIVE PROCEDURES FOR ITS
TREATMENT AND A DESCRIPTION OF THE WRITER'S
OPERATION FOR CHRONIC INVERSION.*

BY B. BERNARD BROWNE, M.D., BALTIMORE.

Inversion of the uterus is one of the most formidable accidents to which women are liable. If occurring during parturition and its reduction be not almost immediately effected, fatal consequences very frequently ensue as the result of the violent hæmorrhage, pain, and shock.

Should this first dangerous condition be survived, the pain and hæmorrhage will continue at intervals during the nursing period. When the child is weaned, however, profuse menorrhagia and metrorrhagia will soon set in, and be followed at intervals by a characteristic white discharge.

The unfortunate individual may drag out a miserable existence for months or years, and gradually succumb to the anæmia and exhaustion incident to her condition.

Of all the physical lesions of the uterus, this appears the most extraordinary, as it is produced by a kind of displacement which the organ executes upon itself, and reversing entirely the order of nature, partially or wholly.

Inversion of the uterus was probably of more frequent occurrence in ancient times than at present. The basis for this statement is twofold: First, that ancient authors give such accurate descriptions of the condition, its differential diagnosis and treatment; and, secondly, because in very early times women were delivered either in the standing or kneeling posture or sitting upon a hollow stool, which allowed the fœtus to drop through. In all of these positions sudden and violent expulsion was liable to occur, and with it that form of traction upon the cord, placenta, and fundus of the uterus which is recognized as one of the most potent factors in causing inversion.

In the Bible there is a remarkable allusion to the manner in which women were delivered. In the first chapter of Exodus, in which we read that Pharoah, King of Egypt, being alarmed at the rapid increase of the Hebrews, conceived a method of preventing this increase, remarkable for its ingenuity. In the fifteenth verse we read:

* Read before the American Gynæcological Society, May 23, 24 and 25, 1899.

And the King of Egypt spake to the Hebrew midwives (of which the name of one was Shiphrah and the name of the other Puah).

16. And he said when you do the office of a midwife to the Hebrew women, and see them upon the stools, if it be a son, then you shall kill him; but if it shall be a daughter, then she shall live.

17. But the midwives feared God, and did not as the King of Egypt commanded them, but saved the man children alive.

18. And the King of Egypt called for the midwives and said unto them, Why have you done this, and have saved the man children alive?

19. And the midwives said unto Pharaoh, Because the Hebrew women are not as the Egyptian women; for they are lively and are delivered ere the midwives come unto them.

Such being the manner and custom of delivering the parturient women, it is not surprising that a large number of cases of inversion of the uterus occurred, and that much attention was given to the diagnosis and treatment of this accident.

Hippocrates,²⁷ in his treatise on the nature of women, and also in his treatise on diseases of women, classifies all cases of prolapsus uteri under four heads. Under the third class he clearly distinguishes inversion of the uterus from other forms of prolapsus. He describes this condition as occurring when the uterus escapes entirely from the vagina and presents itself as a scrotum or purse (*οιον σαχη*) hanging at the opening of the genital canal like a swollen tumor, without any opening at its lower extremity, but narrower at its upper part.

This accident, he says, happens when in labor the woman experiences such great exhaustion as to cause complete inertia or paralysis of the womb. It is attended with pain in the abdomen, loins, and groins, and when it exists for a time the uterus cannot be returned.

The method of treatment proposed by Hippocrates for this affection merits our attention. The woman is placed upon a couch on her back, the feet elevated, the legs extended, then several compresses or sponges are applied against the tumor, and retained in place by a perineal bandage. If after seven days the uterus yields to this treatment and returns to its place, a satisfactory result has been obtained. If it does not yield the uterus is anointed with a fatty substance, the woman is fastened by her feet to a ladder, with her head down, the ladder is then shaken (this last precept is omitted in the book on "Diseases of Women," but is mentioned in that one on the "Nature of Women"), then by taxis and compression the hand reinverts the uterus.

A very interesting case showing the efficacy of the method of

treatment practised by Hippocrates was published in the *Gazette Hebdomadaire* in 1859. Dr. Castex,¹⁷ a consulting physician at Tangier, was called upon to attend a woman who, in consequence of excessive traction upon the cord, was suffering from a complete inversion of the uterus. He made several ineffectual efforts at reduction. After he had retired from the case a Moorish midwife suspended the sick woman by the feet, and having poured a bottle of oil upon the tumor succeeding in reducing it.

In commenting upon this case Denucé contends that it is a positive proof that the methods of Hippocrates had been handed down by tradition from the Greeks to the Arabians; Rhazes and Avicenna having reproduced almost literally the procedures of reduction of Hippocrates, and that this tradition had been perpetuated by the Arabs, so that twenty centuries after Hippocrates an ignorant woman—a Moorish midwife—placed in the presence of an inversion, did not hesitate a minute, but applied exactly the procedures of Hippocrates and obtained a reduction.

Aræteus⁸ of Cappodocia, A.D. 30-60, describes inversion of the uterus as being caused by the violent expulsive pains of parturition. If death does not occur at the time the woman is destined to drag out a miserable existence. That part of the uterus which was intended to be inside and protected from exposure is turned out, and from constant irritation bleeds freely, and, finally, from loss of blood, the woman dies.

Themison,⁵¹ B.C. 50, was the first to suggest amputation of the uterus when a gangrenous condition had supervened after inversion; but it remained for Soranus⁴⁴ of Ephesus to carry this suggestion into effect, about one hundred and fifty years later. Soranus⁴⁵ also pointed out the differential conditions that existed in inversion and fibroid tumors or polypi projecting into the vagina. In recommending ablation he says that he does not believe that the uterus is indispensable to life, for in some cases not only has it been prolapsed entirely outside of the vulva, but has even been torn away by violence without causing death, and, also, as Themison⁵² has suggested, in Gallatia, the meat of the hog is more beautiful and better for alimentation when it is procured from animals whose uteri have been removed.

Therefore, he says, if the uterus be inverted, and, through the progress of time and want of care, putrefaction has set in, or if by continued contact with the urine or by the salty deposits on it it has become ulcerated, it should be removed without any fear of danger. He relates a case where the uterus thus putrefied had been totally removed in which recovery took place.

Celsus, A.D. 1-50, does not mention this condition in his work, but in the preface he speaks of a case of inversion which died under the care of two of the most celebrated physicians, who did not discover the nature of the trouble until after the death of the patient, when the uterus, covered by its lining membrane, was found like a mass of flesh in the vagina. No cervix or os could be seen, only the body of the uterus presented at the vulva.¹⁸

When we investigate the history of inversion during the middle ages we find that the Arabian physicians, Rhazes⁴⁰ and Avicenna,⁴ who lived in the eleventh and twelfth centuries, had acquired most of their knowledge from Hippocrates and Soranus. They speak plainly of this condition, and describe it as when the interior of the uterus becomes the exterior. This accident, they say, is caused either by the too rapid escape of the fœtus, or in consequence of a jump or violent blow, or by bad management in the extraction of the placenta. When it happens it is accompanied by violent pain, profuse hæmorrhage, and high fever.

Ambrose Paré, in his work on "Surgery," published in 1573; Schenckius, *Obs. Med. Malad. de Femmes*, in 1600; Mercurialis, *Malades des Femmes*, in 1601; Ruysch, in 1727; Heister, *Institut. Chir.*, in 1739, all described this condition and made observations as to its cause, prevention, and treatment, discussing principally, however, the advisability and methods of amputating the uterus, whether spontaneous reinversion were possible, and whether inversion during labor could occur except from undue and unnecessary traction upon the cord.

During modern times, although many cases of spontaneous replacement of the inverted uterus had been reported, and although Genselius,³⁶ in 1716, had succeeded in replacing an inversion several days after its occurrence, Hoin,³⁸ in 1746, reduced one complicated by inflammatory conditions four days after its inversion. Lauerjat,³³ in 1775, reduced one threatened with gangrene twelve days after its occurrence. Chopart¹⁹ and Ané,² in 1779, reduced similar cases, the first on the eighth day and the other on the fifth day after its occurrence; yet I have been unable to find any record of a case of chronic inversion cured by operation previous to 1847.

The results obtained in the above-mentioned cases, and the fact that spontaneous reinversion did sometimes occur, established a hope that a successful method of treatment might be discovered; but for the next half-century no progress whatever was made.

On August 26, 1847, a new era arose in the history of inversion,

and the possibility of cure became an established fact. On this day, under the influence of ether, Valentine de Vitry⁵⁵ reduced a chronic inversion of sixteen-months' duration, and from that time to the present a very large number of cases have been cured, and numerous operations and procedures have been devised and brought to the attention of the profession.

Estimates as to the frequency of the occurrence of this accident vary considerably. Dr. Moore Madden,⁵⁶ in his article on "Acute Inversion," states that from the foundation of the Rotunda Hospital, in 1745 to 1868, a period of one hundred and twenty-three years, 190,833 were delivered, and only one case of acute inversion was observed. Braun⁹ states that of 150,000 births in the clinics respectively under the charge of Spaeth and himself not a single complete inversion had come under his notice. Winckel⁵⁹ states that inversion takes place once in 2000 deliveries; that it is most frequent in multipara, but not unusual in primipara. In the above collection of cases the number of the delivery was noted thirty-three times, and of these eighteen were primipara.

It is worthy of note that the same woman may suffer from inversion after several successive deliveries, as is shown by the cases of Amand,¹ Kühlband,⁸¹ and of Crosse.⁸¹

Windsor⁸¹ says that inversion of the uterus is not so rare an occurrence as many suppose, even in the present day, when so much information on the particular branch of medicine of which it forms a subject has been diffused by the writings of numerous valuable authors; for, as the accident is generally thought to imply a degree either of carelessness or rashness on the part of the accoucheur in the extraction of the placenta, he will endeavor, with a view to save his own credit, to keep the real nature of the affection as secret as possible, and an early death often assists in throwing the shade of oblivion over the patients themselves.

According to Crosse,⁸² inversion occurs one time in 140,000 labors, and of four hundred cases of inversion three hundred and fifty followed delivery; forty were from fibroid polypi and ten from other causes; out of one hundred and nine fatal cases of which he had records seventy-two died a few hours after delivery, eight at the end of a week, and six in a month. Death was caused from hæmorrhage, pain, convulsions, or syncope following shock, from exhaustion, or from the effects of violence, especially if the inversion had been mistaken for a polypus and had been dragged, bruised, or lacerated.

When the immediate danger is dissipated there is, during lactation,

an interval of relative safety, when serious symptoms frequently cease, only to reappear later on. The inverted uterus may be strangulated, especially if inversion is incomplete. Dewees completed inversion in a patient in order to stop strangulation. This accident may be serious enough to produce gangrene of the organ (Crosse³⁸ relates several cases), and is consequently very dangerous unless spontaneous elimination of the gangrenous uterus terminates the malady favorably.

For convenience of description inversion may be divided into acute and chronic, and each of these divisions may be subdivided into partial and complete. Although inversion in the vast majority of cases begins by an indentation of the fundus, there are undoubtedly some in which it begins in the cervix, with complete relaxation of the os co-existing with violent action of the fundus. This mode of inversion, or rather intussusception, of the uterus was first recognized by Saxtorph⁴¹ of Copenhagen in 1804, and has been fully and ably set forth by Radford³⁹ in 1837, and more fully by Dr. Isaac E. Taylor⁴⁰ of New York (one of the founders of this Society) in 1872.

Quite a number of cases are on record in which spontaneous inversion has taken place in women who were not pregnant, had no polypus, and had never had children.

Sir James Y. Simpson⁴² reports two cases of intussusception of the uterus, beginning at the cervix and terminating in complete inversion, with expulsion of the child, which took place after the mother's death.

As a complication of acute inversion, the possibility of the small intestines prolapsing into the inverted sac, may be mentioned; cases of this kind have been reported by Levret³⁶ and Browne.¹⁰

I have seen six cases of inversion of the uterus—two acute, one chronic, and three caused by intra-uterine fibroid tumors.

Case I.—August, 1871. Complete inversion of the uterus with the placenta attached, caused by traction upon the cord by the midwife, seen by me two hours after delivery. The uterus and placenta were lying outside the vulva. The woman was in a state of syncope and collapse from the loss of blood. With some difficulty I succeeded in separating the placenta. Its attachment to the uterus was broad, and the uterine walls were thicker at this part, although the whole uterus was thin and flabby. Reversion was accomplished without much difficulty, but the uterus did not seem to contract. On the contrary, the relaxed and flabby organ showed great tendency to a recurrence of the inversion. On any attempt to remove the hand from the cavity there were also frequent and copious gushes of blood spurting from the uterus.

The hips were elevated, ergot was administered hypodermatically,

and the cavity of the uterus irrigated with very hot vinegar and water, while the hand remained inside until firm contractions set in.

Case II.—Inversion of the uterus, with cystocele and strangulation of the intestines in the inverted uterus. On September 29, 1875, I was called to see Mrs. Annie P., who had been delivered by a midwife six days previously. She had a complete inversion of the uterus, and was almost moribund. She had had the symptoms of strangulated hernia for three days, stercoraceous vomiting, etc. The intestines could be plainly felt in the inverted uterus. Upon introducing a catheter into the bladder a large amount of putrid urine was drawn off. She had passed no water for three days. I was informed that several attempts had been previously made to empty the bladder with the catheter, but without success.

An effort was made to reinvert the uterus, but on account of the exhausted condition of the woman it had to be abandoned. She died in a few hours.¹⁰

*Case III.*¹²—On August 13, 1894 I was consulted by Mrs. McS., aged forty years, the mother of five children, the youngest eight years old. She had been suffering for the past two years with menorrhagia and metrorrhagia, and had considerable pain in the pelvis. The discharge from the vagina was very offensive. She had become pale and blanched from the loss of blood. Her attending physician thought she had cancer of the uterus. Upon examination I found the vagina filled by a large tumor, the lower part of which was in a sloughy condition and bled freely upon manipulation. The fundus of the uterus was absent from its normal position, and the cup-shaped indentation of the inverted organ was easily made out by rectal examination. On the following day, under anæsthesia, the tumor was more carefully examined; the presenting extremity was drawn outside the vulva. The broad attachment of the pedicle could be traced up to the fundus of the now completely inverted organ. The line of demarcation between the tumor and uterus could now be distinguished, and careful enucleation was made along this line. In order to keep up steady traction upon the tumor during the process of enucleation, two corkscrews were inserted into it. These were of very material aid, as the vulsella would frequently tear out when strong traction was made with them.

When the tumor was finally removed two vulsella were inserted into the vaginal attachment of the cervix, which held it firm while the right corner of the uterus was indented and pushed up until complete re-inversion had taken place. The cavity was then washed out with hot water, dried, and tamponed with iodoform gauze, and a silver suture

passed through the anterior and posterior lips of the cervix, so as to hold them together and prevent the uterus from again becoming inverted. Recurrent inversion is not liable to occur. Swan reports a case of this character in the *Albany Medical Journal* of January, 1898, and says it is the only one on record. [Smellie: (Barnes, "Diseases of Women," p. 618), however, related a case of a woman whose uterus, after inversion, having been replaced, was immediately reinverted.] The vagina was then packed lightly with iodoform gauze, which was removed on the third day, together with the silver suture and the intra-uterine packing. She has been perfectly well since.

Case IV.—Mrs. F., aged thirty-eight years, six children, youngest four years old, consulted me on February 15, 1897, on account of a continued uterine hæmorrhage, which had persisted almost constantly for the past six months, when the hæmorrhage was checked. The discharge was of an offensive character. Upon examination I found a fibroid tumor completely filling up the vagina and at the same time drawing upon the fundus of the uterus, at the seat of its attachment, to such a degree as to cause partial inversion of the uterus. By traction with vulsella and strong pressure upon the already indented fundus the uterus was completely inverted and drawn down to the vulva outlet, the tumor being entirely outside. The orifices of the Fallopian tubes were distinctly visible. The pedicle was short, but was attached by a broad base to the fundus of the uterus. The line of demarcation between the pedicle and the uterus was easily defined, and enucleation was made without any great difficulty.

Reinversion was performed as in the previous case, and the subsequent treatment was also the same.

*Case V.*¹¹ was Mrs. M., aged thirty-five years, who had been bleeding for several months. A bloody tumor was projecting into the vagina, and upon examination over the abdomen a hollow indentation was found in the fundus. Upon examination through the rectum a much larger mass was felt than would have been the case in inversion; besides, the mass was much harder; the sound passed in on the right side and could be felt through the abdominal wall. The conditions here were very similar to those of inversion, but they did not correspond entirely.

I concluded to pull the presenting tumor through the vulva, so as to bring the orifices of the Fallopian tubes into view, and if it proved to be inversion, and could not be returned by taxis, I intended to cut through the posterior wall of the fundus, pass a large Sims uterine dilator through the opening thus made, dilate the constricted cervix,

and then reinvert the uterus as in the case reported by me in the *New York Medical Journal*, November 24, 1883.

When the tumor was brought into view outside of the vulva I found it was a large fibroid, attached to the fundus of the uterus by a short, thick pedicle. It was carefully enucleated from its attachments. By pressure and indentation of one horn the body of the uterus was readily reinverted (as the caliber of the cervix had been maintained in a dilatable condition by the partially inverted organ).

The conditions which predispose to the occurrence of inversion are relaxation of some part or the whole of the walls of the uterus or considerable enlargement of its cavity.

Adhesion of the placenta to the fundus is a frequent cause. Paralysis of the placental site is mentioned by Rokitsansky as one of the causes; then if the placenta adhere and be dragged upon by the cord from below, or if the diaphragm and abdominal walls act, as in a bearing-down effort, the part already indented is forced further down into the cavity. The external cup-like depression formed by the paralysis of the placental site may be felt by examination through the abdominal wall; continued pressure or expulsive efforts force the fundus down upon the cervix, which, if relaxed or lacerated, may form no barrier to the further protrusion.

Crosse states: "I cannot conceive that the organ itself has any power to commence the displacement and to cause simple depression, but when a commencement has been made and the case goes on to introversion, bringing the fundus within the grasp and influence of the uninverted body of the uterus, this organ will, by the natural powers called into action by its sensibility, regard the inverted part as an extraneous mass, and proceed to act upon it, by successive and suitable efforts of its muscular coat to propel it downward, while the os and cervix will, as in delivery, become dilated, and thus a part of the uterus will act on the rest and carry on the displacement, even to extreme inversion. The abdominal muscles will assist in the expulsion."

Delivery in the upright and kneeling positions has been a frequent cause, also a short cord,³⁰ or one wrapped around the neck, especially if forceps are used.

Some of the other very numerous causes which have been known to produce inversion are: Distention of the uterus by a large amount of amniotic fluid; excessive coughing, sneezing, extreme softness of the uterus, and blows on the abdomen previous to labor; hydatiform growths in the uterus; insertion of the placenta directly at the fundus, the uterus and vagina being in a relaxed state, or when prolapsus has

existed; fatty degeneration of the uterine walls at the placental site; intra-uterine polypi; sarcoma of the fundus, and lifting heavy weights while menstruating.

Recurrent Inversion.—When the inverted uterus is successfully restored to its normal condition it is liable to become again inverted, and many cases of this character have been reported; for instance, Barnes⁶ quotes a case related by Smellie and also one occurring in his own practice. Other cases of this kind have been reported by Drs. Milne Murray,³⁷ M. B. Wright,³² J. W. S. Coward,²⁰ William E. Swan,⁴⁶ I. H. Tate⁵⁰ of Cincinnati, and Browne⁵² of Baltimore, the two latter put in silver sutures to prevent recurrent inversion.

Lauverjat,³⁴ in 1771, related a case of inversion of ten months which he replaced several times, but was unable to keep it from returning on account of the expulsive efforts of the patient.

Spontaneous Reposition of the Inverted Uterus.—Interesting cases of this kind have been reported by Harris,³⁶ Meigs, Leroux, De la Barre, Thatcher, and Otto Spiegelberg.⁴⁷ The latter wrote an elaborate paper on this subject in 1874, in which he collected ten cases, including his own.

Diagnosis.—In acute inversions there is generally no difficulty in the diagnosis. In the chronic state, however, many errors have been made. It is most likely to be mistaken for a fibroid tumor or polypus.

If a pyriform tumor presents in the vagina, and bimanual examination proves the fundus absent from its usual position, and this is corroborated by a sound in the bladder and the finger in the rectum; if the two fingers in the rectum pass into a hollow cone, which, when the pyriform mass in the vagina is pressed upward, seems to be part of it, inversion most likely exists. Should there be any doubt, however, pull the tumor entirely outside the vulva and find the uterine orifices of the Fallopian tubes.

All doubtful tumors of this character should be given the benefit of the doubt, and should not be removed until the possibility of inversion is absolutely excluded.

Treatment.—Aran⁸ treated the inverted organ with the actual cautery. By this means he transformed the bleeding mucous surface of the uterus into a cicatricial tissue through which the blood could not penetrate.

Then we have the various forms of taxis:

1. Central taxis, which was practised successfully by Viardell⁵⁶ in 1674, on a recent case of inversion.
2. Peripheral taxis. By this the hand grasps the fundus of the

uterus, and after some compression attempts to return it by making the part which came out first the last to return. This was the procedure adopted by Ambrose Paré, Mauriceau, Amand, Puzos, Astruc, Pajot, Tarnier, and Montgomery.

3. Taxis on the sides of the uterus and attempting to return one horn of the uterus and then indenting and returning the other. Although commonly known as Noeggerath's⁵⁵ plan, and performed by him in 1858 and 1862, he was antedated by Deleurye,⁵⁴ in 1787, who was successful in returning a recent case of inversion by this means.

It may be of interest to know that this is the method used by veterinarians in returning inversions in the mare and in the cow, this accident being a frequent one in these animals.

4. Prolonged taxis, relays, etc., have been successful in some cases. All these methods of taxis are supplemented by abdominal, rectal, or vaginal counter-pressure to aid in dilating the inverted cone.

Barnes made incisions in the cervico-uterine tissues. Tate's⁴⁸ (Cincinnati) method consisted of recto-vesico-vaginal counter-pressure. Emmet's method.*

A modification of Gariel's air-pessary was used by Tyler Smith⁴⁸ in 1858.

The water colpeurynter was introduced by Wallerlein⁵⁷ in 1870, and the spiral spring by White⁵⁸ of Buffalo in 1865. Barnes used the stem and cup-pessary, with elastic bands, in 1872, and Avling added the pelvic curve in 1879.

In a difficult case Thomas⁵⁴ of New York made an abdominal incision and dilated from above.

Bryne's method: A cup in the vagina, and a plug indenting the abdominal walls and cervix.

Wing's⁶⁰ method: A soft-rubber doughnut-pessary tied to the end of a long stick.

Watt's⁵⁸ method: Compression of the fundus by an Esmarch bandage.

Barsony's⁶ method, 1890: Inversion of four-months' duration; water colpeurynter used for sixteen days; no improvement; was removed for three days, and again tried for several days, without result; the fundus was then held firmly in one position by pads of iodoform gauze packed tightly into the walls of the vagina, and the colpeurynter again inserted. During the night there were violent labor-like pains, and the next day the uterus had disappeared from the vagina. The uterus was reinverted.

*See Emmet's "Principles and Practice of Gynecology," second edition, p. 418.

Knock's,⁸⁰ 1890: A globe-funnel tampon of rubber exerts pressure upon the inverted organ both by lateral and axial pressure simultaneously. The instrument is a globe-shaped colpeurynter, which has a funnel-shaped depression at its summit into which the inverted uterus fits. Upon being filled the colpeurynter first distends the vaginal walls, then exercises even pressure laterally and from below upon the inverted organ, and finally under increased pressure pushes it up so that the former funnel-shaped cavity is converted into a pyramidal expansion of the colpeurynter. This presses into the cavity and causes complete reposition of the organ. In one case of sixteen-months' duration this instrument produced this effect with astonishing promptness.

Küster's method,⁸² 1893: (1) A broad, transverse incision is made into Douglas' cul-de-sac. (2) One finger is inserted through this opening from behind into the inversion-funnel. This affords an opportunity to separate any peritonæal adhesions which may occlude the funnel. (3) The posterior wall of the uterus is incised on the mucous surface longitudinally as near as possible in the median line, the incision to begin about 2 cm. above the inverted fundus and to end 2 cm. below the external os, penetrating the peritonæal coat of the uterus. (4) Reinversion of the uterus by fixing the funnel with the index-finger in Douglas' cul-de-sac and pushing up the fundus with the thumb of the same hand. (5) Suturing the wound in the uterus on the peritonæal surface with deep and superficial sutures. (6) Suturing Douglas' cul-de sac. This operation has been performed four times, twice with success.

Browne's operation,⁸⁸ November 2, 1883: The patient upon whom I operated presented the following history:

Case VI.—Mrs. I., aged twenty-eight years, white, married ten years, has had two children, the youngest six years of age, and has had no miscarriage since. She is a large, stout woman, with thick abdominal walls, weighs about two hundred pounds, and has all the appearance of perfect health, except she is very anæmic. Three months after her last confinement she had a severe hæmorrhage from the vagina upon rising in the morning. She lay at the point of death for nine weeks, and since then has been unable to be out of bed for more than two or three weeks at a time, suffering at intervals with hæmorrhages, which have lasted from two to four weeks. She has had to be extremely careful in her movements at all times, for fear of bringing on a hæmorrhage. Her attending physician had made the diagnosis of "bleeding tumor of the uterus," and offered from time to time to remove it, which, fortunately, was not done.

In March, 1883, she came under my care, and was examined under an anæsthetic. The diagnosis of chronic inversion of the uterus was made. A prolonged effort at reduction by taxis did not succeed in restoring the uterus, but a profuse hæmorrhage was excited by the manipulations, and the vagina had to be tamponed with cotton saturated with dilute Monsel's solution. A short time afterward another ineffectual effort at reduction was made. Then continued pressure with Gariel's air-pessary was resorted to, and used for six weeks, followed at the end of that time by another ineffectual effort at reduction by taxis. In October she came into the Woman's and Child's Hospital, where I made another attempt at reduction, trying Noeggerath's and Courty's methods, but again with failure. The os could be plainly felt through the rectum, but the cervix was so firm and unyielding that it could not be made to dilate.

On November 2d, the bowels and bladder having been evacuated, she was placed under ether, the inverted fundus was drawn outside the vulva with a strong vulsella forceps, the openings of both Fallopian tubes were brought plainly to view, and an incision one inch and a half in length was made through the posterior portion of the uterus (avoiding the Fallopian tubes and larger vessels at the sides of the uterus). Through this incision Sims' large dilator was passed up into the cervix and expanded to the fullest extent; the rigid tissues of the cervix were felt to relax; then, upon withdrawing this dilator, Nos. 2 and 3 of Hank's hard-rubber dilators (three-fourths and one inch in diameter) were passed through the cervix. The finger was also passed to feel that there were no adhesions. The incision in the uterus was then sewed up with carbolized silkworm-gut, and, with slight manipulation, the fundus was easily replaced through the now passable constriction.

The whole operation was performed in less than thirty minutes. There was considerable hæmorrhage from the uterine cavity when the uterus was first replaced. On the next day the temperature was 102° F., but gradually returned to the normal condition, which it reached on the fourth day. During the first week she complained of severe pain in the uterus, but this was controlled by full doses of opium.

She was placed upon the table and examined on the 14th (twelve days after the operation). The cervix was somewhat patulous, but, with this exception, the parts were all in a normal condition.

Conclusions.—1. This operation is not proposed to supersede ordinary taxis in the reduction of chronic inversion of the uterus.

2. It is not more dangerous, but much more certain, than prolonged or rapid taxis.

3. We avoid the danger of bruising the tissues and rupturing the vagina.
4. As an operation for inversion it is less dangerous than laparotomy.
5. Unless there be adhesions (which rarely exist), we can always feel certain of reducing the inversion at one operation.

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RECTAL IRRIGATION IN GYNÆCOLOGY.*

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The theory of rectal irrigation in itself admits of no new view, but its recent employment by specialists marks a distinct advance in routine methods, and furnishes a valuable acquisition to local therapeutic and mechanical measures in gynæcological practice, both before and after operative procedures. No apparatus yet devised for this specific purpose so scientifically meets the requirements as Kemp's tube, introduced to the profession some two years ago. Rectal irrigation will never supersede vaginal douching, nor is it intended to. Its advocates advance no such claim. But as a substitute in selective cases, it is sure to occupy a prominent position in our modern armamentarium. Those interested in female complaints will hardly evince a hasty desire to discard vaginal douching entirely in preference to rectal, having become too firmly convinced of its equal value when properly administered as taught by Sims and Emmet. And there is no sound reason why they should. The ideas herein advanced are not to be conceived as an attempt to advocate the superiority of rectal over vaginal irrigation, but to demonstrate that in certain types of ailments the former does surpass the latter. On such premises is this article based.

The writer's attention was first directed to this novel technic while interne on Dr. Hanks' service in the Woman's Hospital. At that time it was customary for nearly all his ward patients to receive rectal irrigation, especially those evidencing retroversions, pelvic exudates, tubal and ovarian lesions in all stages, and also constipation. On questioning both patients and nurses as to the immediate effects observed, positive opinions were received as to its superior action. Since then, on every possible occasion, rectal irrigation is prescribed, not because I am a faddist, but an extended personal experience convinces me of its reliability and allows me to unhesitatingly subscribe to its value. On two occasions only has it failed to give actual results.

It is interesting here to note in what manner rectal irrigation effects its particular action. When we recall how clearly defined the uterus and its appendages appear during a bimanual rectal examination, and

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how intimately the genital and rectal circulations anastomose, a clearer conception is gained of the more constringing effect of a prolonged rectal over vaginal irrigation. By the ballooning of the entire rectum with the hot fluid, a larger vascular area is directly presented to the heated medium, and its ultimate effect on the vessels is greatly increased. In vaginal douching, the introduction of the tube is necessarily limited by the vaginal vault, which allows the fluid to come into contact only with the vaginal walls and the portio, and affording no such excellent opportunity to be brought into almost immediate proximity to adnexa and the whole posterior surface of the corpus uteri, as in rectal. This statement will readily be acknowledged by all familiar with pelvic anatomy. Clearly, then, rectal irrigation permits these viscera and their abundant vascular supply indirectly to be more fully bathed by the hot water than in vaginal. In addition, by its retroactive effect on the intestines themselves, there is promoted through the sympathetic system, a stimulation of the unstripped muscular fibers in their walls, which not only increases peristaltic action, but seems to act reflexly even on the cardiac muscle, as noted in the use of this form of irrigation in counteracting shock. This fact is noticeably apparent by a comparison of the quality and tension of the pulse before and after irrigation. Part of this cardiac stimulation may be due to absorption of the saline and its filling of the vessels. The heart thus receives more fluid, and necessarily its action must be spurred on in its endeavors to compensate for this increased fluid. The employment of rectal irrigation is not the administration of an enema, and in private practice it is policy to make this point clear to the patient at the outset.

As regards technique, a few minor but important details are essential. The tubes are made of rubber, aluminum, or glass. The latter is advisable, as its cleanliness can always be positively demonstrated. It is preferable to use the largest-sized tube, and, prior to using, thoroughly anneal to diminish its brittleness. Insert into the rectum as an ordinary rectal-tube, using no unnecessary force. Sphincteric spasm is best overcome by absence of haste and a slight effort on the patient's part to bear down as in defæcation. Either Sims' or the dorsal decubitus may be elected. At least two gallons, preferably six to eight, 110°-115° F., give best results. Negative effects arise from the use of too small a quantity of water and not of a sufficiently high temperature. A gentle backwards and forwards motion of the tube, accompanied by a slight rotary action, is necessary to dislodge any particle of fæcal matter which may obstruct the lumen, and also to prevent any drawing of

the rectal mucosa into the fenestra, as the suction in the reflux tube from siphonage action is considerable. From neglect of moving the tube as described, portions of the mucous membrane may be forcibly detached on withdrawing the instrument. Care only is necessary to obviate any such tissue destruction. One expert in the use of rectal irrigation can employ it without even soiling the bed's or the patient's linen, but at first trial it is advisable to spread a rubber sheet under the hips or use the dorsal position with patient on a douche-pan. The vesical tenesmus, which at times supervenes, seems best relieved by suppositories of iodoform, conium, and belladonna, which also tend to quiet any rectal irritation which may persist.

As to the cases in which rectal irrigation is applicable, considerable limitation is allowable. One who makes a specialty of employing this form of hydrotherapy soon finds himself supplementing his prescribed treatment of all pelvic affections with rectal irrigation in addition to other palliative measures. Experience and judgment are the criterion, when to use or not. It is not my intention to relate successive cases in detail, with appended statistics, but rather to select a few of the different types of gynecological cases where rectal irrigation has proved serviceable, and also those in which it furnishes the most instructive results.

In virgins with rigid hymen or small introitus, who present one of those typical histories of leucorrhœa following a prior, and, perhaps, obscure, attack of localized peritonitis (due either to a previous exanthematous attack, bathing or other exposure during menses, with succeeding temporary suppression), when the effect of a vaginal douche is required, rectal irrigation is *par excellence* the ideal method of depleting the pelvic circulation. Especially is this true in the leucorrhœas of retroversions or other displacements, and in ovarian congestions. There is, after all, a natural hesitancy in demanding that young girls should be forced to employ a vaginal douche, especially if prolonged, which it needs must be to produce its effect. Rectal irrigation not only acts as an efficient substitute, but it obviates any relaxation of hymen, and also precludes the enervating effect of a prolonged hot douche in a young unmarried female. Instances are not rare in which these prolonged douches have not only induced nausea, but even syncope. Gynecologists are not yet agreed as to the advisability of prescribing prolonged douches in every instance, especially if there is not abundant leucorrhœa. A large quantity of water is necessary to produce the desired vascular constriction, and a small quantity will not exert such a benefit. It is also a well-known fact that prolonged douch-

ing lessens the normal vaginal acidity, which is Nature's barrier to the entrance of pathogenic organisms, with the possible exception of the gonococcus of Neisser and the bacillus tuberculosis. To this end have lactic-acid douches been recently advocated by Ilkewitsch and Dalché. Advocates of rectal irrigation can advance a step further, avoiding vaginal douches entirely in young, unmarried girls, and yet accomplishing the same ultimate effect.

I do not decry vaginal douching, for there are times when it is imperatively needed, for cleansing if nothing else, but in the class of cases just mentioned, rectal certainly equals vaginal irrigation, and the girl is not subjected to a prolonged douche. There is too much indiscriminate douching in young girls, and many physicians have slight consideration in ordering six to eight quarts of hot water to counteract the leucorrhœa of some pelvic ailment. Such conclusions advanced before the Woman's Hospital Society may appear heretical, but clinical and personal experience proves the right to formulate these seemingly arbitrary opinions. It is my firm belief that the limitation of vaginal douching is not quite fully mastered by all, or, if so, that, carelessly, physicians do not discriminate between its restriction and necessary use.

Some of the most striking examples of the efficacy of rectal irrigation occurred during my internship in the Woman's Hospital. The following case is narrated in detail as it was one of many under observation:

Mrs. C., æt. 40; vaginal hysterectomy, with considerable hæmorrhage and shock succeeding operation, followed two days later with complete intestinal paralysis and evidence of sepsis. Extreme tympanites, pulse 160, weak and wiry, temperature 104.2°, and patient rapidly becoming moribund. Repeated enemas and free use of carthartics of no avail. Prognosis grave and recovery regarded doubtful. To my knowledge rectal irrigation had never been employed previously in any such case in this hospital. Six gallons given, 115° F. The intestines, which before had refused to react to any stimulation and expel their contents and gas, now feebly responded after the second gallon, and strongly during the remainder of the irrigation. Large quantities of gas were voided, the patient became less restless, and the temperature and pulse fell perceptibly in a short period of time. Her condition was almost immediately improved, and she made an uneventful recovery. The irrigation was continued at intervals for the following few days. It was the general consensus of opinion that there had been a localized septic peritonitis, sufficient to induce intestinal paralysis. Certainly the outcome was nothing short of remarkable,

and occasioned at the time some considerable interest among the staff. Within a few days there was again furnished another opportunity to demonstrate the absolute and relative value of rectal irrigation in a case of vaginal section for double pyosalpinx. Mrs. M., æt. thirty-three, panhysterectomy. Severe hæmorrhage during the operation compelled the use of a large number of clamps, which were undoubtedly the origin of the infection which later supervened. The patient's condition was almost identical with that of the first. After removal of the clamps in thirty hours, rectal irrigation proved successful in warding off the development of an undoubted fulminating septic peritonitis, so suddenly did the symptoms present themselves after operation.

From that time, rectal irrigation became a universal panacea in the hospital, and was resorted to on every possible opportunity by the internes. It is not to be inferred that every case of intestinal paralysis or septic peritonitis will recover, though the cases reported are not the only instances in which a fatal ending has been avoided. Rectal irrigation can, however, recommend itself, even as a *dernier ressort*.

Its value is again forcibly demonstrated in shock following operation, using normal saline as the agent. I speak now of shock accompanying severe major operations, with no evidence of hæmorrhage. Hanks strongly advises this, and reports excellent results. Even in secondary hæmorrhage, after the bleeding-point has been secured, its efficacy cannot be denied. Under such conditions and cognizant of the absorptive power of the rectum so far as saline is concerned, we note in addition to increase of bodily fluids, a secondary stimulating effect on the heart as previously mentioned. However, intra-cellular or intra-venous infusions are more popular in emergencies.

Every gynæcologist has had the irritating experience of post-operative patients complaining of pelvic distress, dull and aching in character or annoyed by the slight tympanites which occasions the convalescent so much discomfort. I confidently assert that the use of rectal irrigation in such conditions will produce in the patient a fuller sense of relief and more permanent in action than any known drug or form of enema. This can be well illustrated in a recent abdominal section in which this pelvic distress yielded quickly to the use of the Kemp tube. The annoying sequelæ obtaining during the first few days disappear readily under this form of irrigation. An interesting private case of intestinal colic is recalled, supposedly due to the presence of adhesions, with unremitting nausea, pain, and restlessness. All the much-lauded specifics absolutely failed, and enemas resulted negatively. Rectal irrigation afforded most marked relief, controlling the nausea

and decreasing the pain as to occasion patient little suffering. Its action on the adhesions, if any, is, to me, unexplained.

The prevalence of chronic constipation in the majority of women afflicted with their peculiar diseases, is so common as to call for more than routine methods. Perseverance only causes an amelioration of such a condition and oftentimes the physician is unable to trace the ætiological factor of this obstinate symptom. Rectal specialists, especially Mathews of Louisville, have devoted entire chapters in their writings to the careful consideration of this ailment. The latest addition to our present array of remedies seems to be rectal irrigation, through the complete stimulation of the entire lower alimentary tract, and the subsequent addition of tone to its mucosa. Surely the theory is tenable and justified by the apparent improvement of many of the Woman's Hospital patients. It has been impossible to record their subsequent condition—whether betterment or failure. My own experience, in private, includes one case, a distinct failure. This patient, after an abdominal hysterectomy, developed constipation to such a degree as to cause her considerable mental worry, as she inferred that some untoward systemic effect would follow from absorption. Careful questioning elicited a negative constitutional history, absence of hæmorrhoids, good levator and posterior vaginal wall, and no evidence of venous stasis. The free use of hot water and phosphate of soda, 3i every morning were advised, but she was still compelled to use purgatives. On advocating rectal irrigation, she conscientiously employed it nearly two months, about three quarts of saline every night. The constipation disappeared in the interim, but returned on discarding the irrigation. Her condition at present is as formerly.

One other failure is to be noted, a case in which I entertained the highest hopes. Mrs. R., æt. eighteen; acute gonorrhœal pyosalpinx. It was my good fortune to be able to observe acute gonorrhœa from inception to present culmination, through the vaginitis, acute septic endometritis, double pyosalpinx, and punctuated at short intervals with three successive attacks of localized peritonitis, all within the space of seventeen days. During the peritonitis, ice bags and rectal irrigation were ordered. The irrigation produced absolutely no results, and was extremely ill-tolerated, the patient complaining of severe pain during its administration, vesical tenesmus, and a constant desire to evacuate the bowels at intervals afterwards, with futile results. Her appeals forced me to abandon a method which, reasoning *a priori*, promised benefit. Its failure was a distinct surprise. The deduction may be assumed that rectal irrigation is not the ideal remedy in acute suppurative proc-

esses, but rather is its field in acute and chronic catarrhal inflammations and congestions, which it relieves through depletion of the intimate vascular anastomosis with the rectal vessels.

To epitomize. Rectal irrigation has been found to have a distinct value in

1. Leucorrhœas.
2. As a substitute for vaginal douching in young girls.
3. Acute and chronic ovarian and tubal lesions, with the possible exception of pyosalpinx.
4. Intestinal paralysis following sepsis.
5. After major pelvic operations to relieve any abdominal discomfort or tympanites.
6. Intestinal colic.
7. Doubtful in constipation.

There is a distinct trend towards individualizing one's own particular line of treatment, and essaying to maintain an independent position. Established ideas are rarely rejected in preference to innovations, unless the latter are qualified to merit careful attention. Of these, rectal irrigation commends itself to gynæcologists for thoughtful and unprejudiced consideration, as having seldom failed to meet the test on fair trial.

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NEOPLASMS INTERFERING WITH PREGNANCY, WITH
REPORTS OF CASES.*

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It is my desire to present you with a brief *résumé* of the clinical experience I have had with neoplasms complicating pregnancy, omitting from consideration those cases in which there is no interference, although new growths exist, as may be found, for example, when a fibroid is situated in the fundus of the uterus. Here pregnancy may progress and terminate without the least complication, although occasionally a fibroid in this situation gives trouble, as will be shown by one of my cases.

Women suffering from pyosalpinx, although unilateral, rarely become pregnant, yet we do meet with pregnancy in these cases. Some nine years ago a physician called me to see one of his charity patients who had just died twenty-four hours after beginning labor. She had had pains only during the first few hours, and those were of the first stage. Afterward she went into collapse, and died about two hours before I viewed her body. She had been well nourished and was of average stature, twenty-four years of age, married two years, a primipara, and was within a few weeks of her expected confinement. There was no history of unusual trouble during her period of pregnancy or of excessive leucorrhœa during her married life. Her husband had had gonorrhœa several times, but was cured so far as he knew. I was allowed to make an autopsy, and will state, we thought to find a detached placenta with concealed hæmorrhage. We found the uterus the size of full-term and lying to the right side. There was some peritonæal fluid, turbid in color, with all the evidences of a low form of septic peritonitis. There was no tympanitis or history of much pain. The tube and ovary on the left side were normal. On the right side the tube was as large as my wrist, showing an old pyosalpinx. There was also an ovarian abscess which had about emptied itself. This probably had been the size of an orange. The uterus was removed and opened. The membranes were found intact, with the placenta attached to the right fundus. The child had probably died from suffocation after the mother's death. On being cut, the uterine wall exuded pus. I interpreted this as an old pyosalpinx which was rup-

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tured by the growth of the uterus. The poison had first started up uterine contractions and later paralyzed the centers.

In this connection I will narrate a case seen with Dr. Titus some five years ago. He called me to examine and consider the advisability of operating upon one of his patients who was suffering from a marked pyosalpinx on the left side. The woman was thirty-five years of age, had been married fifteen years, last pregnancy ten years ago. She had suffered for several years from pain in the left side, which was increased upon locomotion. Upon examination I confirmed the diagnosis of pyosalpinx and added to that a suggestion of pregnancy. This latter was so seriously doubted by the patient that I saw her again in two weeks, when I convinced her that she was about ten-weeks' pregnant and also advised her that the operation which she had had under consideration was still urgently necessary. However, she felt that a mistake had been made, and passed from our care. She went to term and was delivered without difficulty, but developed sepsis within twenty-four hours after labor. This continued unabated, and in her second week she was operated upon by a skilful surgeon in a well-equipped hospital. The uterus, tubes, and ovaries were removed *per* abdomen. The tubes and ovaries showed marked disease, probably of long standing. The case was a very bad one and the patient died shortly after operation.

In my maternity service I have considered many of these cases of sepsis developing a few hours after labor as resulting from a diseased tube. If there has been no discovery of this condition until labor, we have nothing to do but treat the patient symptomatically; but where we discover any condition of the tubes or ovaries which would necessitate their removal in the non-pregnant state, we should not delay operation because of pregnancy.

It is important to note that inflammatory conditions do exist with pregnancy, and they ought to be discovered, although a diagnosis can least be made from the history of a pregnant woman, for, while at all times they have a vivid imagination, at this time they are most fanciful, and, therefore, we must depend upon the physical signs. Pain and temperature are valuable adjuncts in making a diagnosis.

Ovarian tumors large enough to be easily felt should certainly be removed when discovered. By permission of Dr. Coe I present a specimen of ovarian cyst, removed by him, which was very adherent in the pelvis behind a uterus six-months' pregnant. At the time of its removal, the whole broad ligament, as well as the tumor, was very much strangulated (twisted twice around its axis), and would cer-

tainly have ruptured soon. The uterus was lifted out of the abdominal cavity before the mass could be reached and removed. The patient made an uninterrupted recovery without any interference with pregnancy. Dr. Coe reported a similar case before the Society five years ago, in which the patient had a normal labor at term.

Several cases have been reported where both tubes and ovaries have been removed, and still the foetus would continue to develop in utero and be delivered at term, showing no detriment to its nutrition. In my experience I have had a patient who had been operated upon when she was two-months' pregnant for the removal of both ovaries and tubes to prevent the growth of what was thought to be a fibroid uterus. This patient went on nearly four months longer and, after a severe accident, went into labor and delivered herself of a six-months' foetus, which was alive and had developed normally for this period of gestation. Except for the accident, she would doubtless have gone to term. The uterus contracted well and afterward was normal in size. Except for the surprise and consequent shock at the mistake which had been made, the case progressed favorably. I report this to show what liberties may be taken with the pregnant uterus.

Fibroids when situated in the fundus of the uterus rarely give trouble, yet they may prevent contraction of the uterus, and consequently cause much loss of blood after labor, or undergo degeneration. Last fall I was called to see a primipara, twenty-nine years of age, who was from six- to seven-months' pregnant. She was and had been for several weeks suffering great pain in the left horn of the uterus. Upon exploring the abdomen there was to be seen and felt a hard tumor about the size of a large orange, attached firmly to the uterus and pressing prominently against the abdominal wall at a point on a level with the umbilicus. This was diagnosticated a fibroid tumor or possibly a dermoid cyst. The patient's suffering confined her to bed most of the time. Her temperature at this time was 101° F. She was removed to the hospital within ten days, and after a consultation with Dr. Coe we decided that we had to deal with a suppurating fibroid and operated the following day. We made a median incision without elevating the patient, avoiding the umbilicus. The tumor and uterus were brought up through the incision, and it was found that the fibroid had a large attachment of omentum and was firmly fixed to uterus. This omentum was first tied off and cut, after which the mass could be thoroughly examined to determine whether or not we should extirpate the uterus. The period of gestation was then about seven months. The tumor was attached to the uterus direct, over a surface three inches in

diameter, and was grayish in color. At one point fluid could be detected on palpation. The red uterine fibers spreading over the mass could be easily distinguished from the growth. We decided to attempt enucleation, and with a sharp knife began to dissect the uterine fibers from the mass. With a round-pointed needle and catgut we passed ligatures under bleeding vessels as they came into view. Enucleation was thus made, leaving a very ugly rent, which seemed to almost perforate the uterus. This was repaired by bringing the edges together with a continuous catgut suture, following the course of a triangle. All oozing was thus controlled; the abdominal wall was closed by the usual method. The patient made an uneventful recovery, and left the hospital at the end of a month. She was delivered at term of a healthy child, being assisted during the second stage with forceps. This fibroid, when cut open, was found to contain about one ounce of pus, which was very close to the surface, and would doubtless have emptied itself before term.

I have had one other case, seen some years ago. In this the tumor was mistaken for a prominent sacrum, contracting the pelvic outlet. It was a fibroid the size of a small apple in the wall of the posterior lip of the cervix. The woman, a primipara, under thirty, was four-months' pregnant. The tumor was very hard and could be but slightly moved in the walls of the uterus. We could not very accurately determine just how high it extended without dilating the uterus, and this would doubtless have induced labor. After receiving permission to examine the patient under anæsthesia and treat the case as indicated, we placed her upon the back and exposed the cervix by large posterior and anterior retractors. The posterior lip was drawn down, and with a knife this was cut in half from before backward, directly through the center of the fibroid. The edges of the wound were opened and the incision extended upward until the growth had been bisected. This incision went as far as if not through the internal os. It was now not very difficult to enucleate one-half of this fibroid and then the other by traction and using the back of the knife as a lever to separate the growth from its capsule. We exercised all possible gentleness in this manipulation. The cavity was partially closed with catgut sutures to control hæmorrhage. The remainder was left to drain without the assistance of gauze, as it was feared that the stimulating effect of a foreign body would induce labor. The patient received a warm saline douche once a day and was kept in bed three weeks, when her recovery was complete. She was delivered at term without accident.

A grave question to decide is whether the growth will be a source

of complication or not. If this is decided negatively and the growth is a fibroid, it is probably better to await the termination of pregnancy. While with cysts, even though they are high up in the pelvis and are movable, it would be my choice to operate, preferably selecting the seventh or eighth month of uterine gestation, as this gives sufficient time for the abdominal wound to heal before labor, and, if labor is induced, the child may still be saved. If the cyst is discovered only at the time of labor as an obstruction its treatment is a most difficult problem. If it is low in the pelvic cavity, it can at times be emptied through vaginal section; but if it prove to be a multilocular cyst or a dermoid, there is great danger of infection.

Dermoid cysts are of especial importance, because of their tendency to suppurate during pregnancy, and, as a rule, they are very adherent, so that the growth of adjacent strictures are apt to cause rupture with infection. I have had the pleasure of assisting Dr. Coe in removing one in a patient four-months' pregnant. She went to term and was delivered.

In reviewing the various statistics, I find a maternal mortality of from 25 to 60 per cent. It is likewise high in the cases which are tapped through the abdominal wall. Extirpation of the uterus seems to give the best statistical record, but, it would be my choice with patient in labor to open the abdomen, remove the obstruction, and, if it is accomplished without much infection, proceed to deliver the child through the natural tract; otherwise extirpate the uterus and tumor.

In cases of impacted fibroids at the time of labor extending within the abdominal cavity, extirpation of the uterus gives the only hope of success. The operation is not very difficult nor dangerous, although it is very serious because it prevents future conception. If the fibroid is small and confined to the cervix, it is sometimes possible to enucleate through the vagina as has been described; or the growth may be pushed beyond the presenting part. However, if these growths are much mutilated they are inclined to slough and give a very high mortality. It has been recommended that labor be induced in the early months when the fibroid obstructs the canal. This will be found to give the highest mortality, and there seems to be no excuse for resorting to such treatment. If, however, the patient aborts spontaneously, and one finds that this has been incomplete, and the contour of the growth is such as would prevent thorough evacuation of the uterine contents, we should promptly proceed to do hysterectomy.

Malignant growths of ovaries or of uterus may be a source of obstruction. If the child has not reached the seventh month, and if

it is an incurable case, it is probably better to await the period of viability. If the malignant disease is confined to the uterus, ovaries, or in any part that could be extirpated, with chance of cure, it would seem wise to operate at once, irrespective of the advantages or disadvantages to foetus.

Polypoid growths or small pedunculated fibroids coming from the cervix should be left alone until the time of delivery. They give no trouble, and may be twisted or tied off at the time of labor. If interfered with at an earlier date, the dilatation of the canal necessary to reach their base is sufficient to incite uterine contractions.

The various cysts found in the vagina or abscesses of the vulvar glands may be incised whenever found.

In all operations upon pregnant women I have a preference for chloroform. The changes which take place in the nerve-centers normally during pregnancy prepare especially for chloroform anæsthesia. Ether stimulates uterine contractions, and the vomiting which so often follows its administration has a tendency to induce labor.

No. 119 West Eightieth street.

A TYPE OF PARALYSIS IN THE DISTRIBUTION OF THE PERONÆAL NERVE FOLLOWING LABOR.*

BY CHARLES J. ALDRICH, M.D., CLEVELAND, O.,

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Few men have had much obstetrical practice without seeing cases of short-lived paralysis and pseudo-paralysis of some of the muscles of one or both lower limbs following labor. While the nature of some of these cases is properly appreciated, the majority are treated as they are diagnosed, in a very misty manner. Some are called "milk-leg," but because of the situation of the pain the majority of such cases are supposed to be sciatic neuralgia.

Books on nervous diseases, like books on obstetrics, are strangely silent on this important subject.

The three cases which I desire to report are selected because they illustrate a type which Huenermann believes to be the most common type of post-partum palsy.

*Read at the May meeting of the Cuyahoga Co. Med. Soc.

Case I.—Prolonged Labor; Right Peroneal Paralysis and Neuritis with Extension to the Other Side; Slow Recovery from Neuritis, but Persistence of Some Atrophy and Paralysis.—Mrs. T., a large, robust woman, aged twenty-nine years, married to second husband. Had a small, delicate child by first husband, who was a small, delicate consumptive. Her first labor was easy and uneventful. Her second husband is a large man. By him this was her first pregnancy.

She labored ten hours, the last three of which she was in constant and severe pain, although tedious labor terminated naturally, June 26, 1892. The child was very large, weighing nearly twelve pounds. Three days after confinement she complained of severe pain in right groin and hip, which extended along the course of the sciatic nerve to the foot and toes. The next day the foot was slightly swollen, with a redness of the dorsum, and extremely sensitive to touch. Considerable loss of power was at once apparent. No intra-pelvic exudation or inflammation could be detected. Lochia was normal, temperature raised 1.5° F., no history of chill.

During the following week she suffered much pain in the hip, groin, and leg. No anæsthesia, but a distressing, burning sensation was present on outside of calf and on the dorsum of foot and toes; its greatest intensity was on the last-named parts. Dr. Walker of Carleton, Ohio, had charge of the case at this time.

July 14.—She had less pain in right side, but both limbs were sensitive to handling, the right being by far the most tender. Since my first visit she had developed a similar, but much less severe, pain in the same regions of the left leg and foot. The right leg had little power and there was evident weakness in the left; no loss of sensation on either side; knee-jerks equal and active; plantar reflex exaggerated on left side.

In eight weeks she walked, with assistance, but limbs were still sensitive to handling. Two and a half months later the sensory disturbances had disappeared, and she could walk about the house unassisted.

At this time considerable atrophy was noticable, especially of the anterior tibial and peronei of the right leg. The diminution in muscular volume of both sides was strictly confined to the distribution of the peroneal nerve. All of these muscles presented varying grades of reaction degeneration.

Six months ago I called and found her much improved, though the lower limbs were still easily tired, yet she assured me that she could

"do a half-mile quite well." The limbs had rounded out and almost regained their normal contour.

Case II.—Prolonged Severe Labor Terminated by Forceps; Right Peronæal Paralysis, Anæsthesia, Paræsthesia, and Neuritis; Recovery from Neuritis and Sensory Disturbances, but Persistence of Paralysis and Atrophy.—Mrs. L., primipara, aged twenty-six years. Labor long and severe, necessitating chloroform and high forceps, April 10, 1884. The following morning she complained of much pain in right hip and leg, with inability to move the member. The symptoms rapidly increased in severity, with all of the characteristic and distressing symptoms of a severe descending neuritis.

After much suffering she gradually grew better, and in three months was free from pain, but the motor functions of all the muscles were completely paralyzed and presented the reaction of degeneration. Some tactile anæsthesia was present on dorsum of foot and toes.

In the following eighteen months the patient did quite well and was able to walk a quarter of a mile with little difficulty. She now enjoys most excellent general health, but the paralyzed muscles remain weak and sensibly lessened in volume. The opposite limb was at no time affected.

Case III.—Prolonged Labor; Instrumental Delivery; Severe Left Peronæal Neuritis, with Paralysis and Atrophy; Limited Loss of Tactile Sensation. Slow Recovery, with Weakness and Atrophy of Anterior Tibial Persisting.—Mrs. E., primipara, aged thirty years. Small woman, with contracted pelvis. After fourteen hours of hard labor she was delivered early on the morning of the 16th of April, 1890, with forceps, chloroform being given. She sent for her accoucher in the evening on account of severe pains in the left hip and leg following the course of the sciatic nerve and its branches. She also complained of numbness and tingling on the outer and anterior aspect of left leg, and loss of power.

During the following week the pain was intense, the whole leg exquisitely tender on handling, especially the foot and toes. Tactile sense diminished on dorsum of foot and toes and on outer and back part of calf. The sensory paralysis remained about the same, but the motor symptoms increased until the leg was practically useless.

I saw the case twenty-two days after labor. No pelvic exudate was discernible, but the pelvic nerves, especially on the right side, were very tender. Quantitative and qualitative changes to the galvanic current were present in all the muscles supplied by the peroneal nerve. Examination disclosed inability to dorsal flex the foot, or extend the

toes. While able to forcibly bend the foot downward and flex the toes, the reverse movements could not be executed. She could also depress the outer border of the foot, but not draw it up. Movements of the hip and knee could be executed with a fair degree of strength and ease. An appreciable loss of tactile sense was present on dorsum of foot and lower part of outer and posterior aspect of calf. No paræsthesia.

It being evident that she was suffering from a traumatic neuritis of the peroneal nerve from injury to its fibers in the pelvis, she was subjected to a plan of treatment to be detailed later.

She slowly recovered, her pain first disappearing. A gradual return of power enabled her to walk quite well in fourteen months. She is now quite well, but considerable atrophy and weakness of the anterior tibial still remains. The opposite limb was at no time affected. She has since been confined, with no increase of the trouble.

The occurrence of this particular type of paralysis following labor presupposes a common origin, and one intimately related to the physiological process of parturition. Its being a sequence to difficult labor immediately causes us to suspect mechanical injury to some of the component or contributing parts of the sacral plexus within the pelvis and a resulting descending neuritis of those nerve-fibers which ultimately emerge from the great sciatic to form the external popliteal or peroneal nerve.

In order to appreciate the mechanism of the injury it is necessary to refer briefly to the anatomy of the parts.

It is to be noticed in this water-color sketch that a part of the fibers from the fourth and all of the fibers from the fifth lumbar segments unite to form this—the lumbo-sacral cord. You will also notice that after their union—above the brim of the pelvis—the cord passes downward, winding over the sharp angle of the linea innominata into the pelvis, where it contributes to the formation of the sacral plexus.

It is to be remembered that from the apex of the sacral plexus arises the great sciatic, from which the peroneal or external popliteal nerve is given off, and that the sacral plexus is formed by the junction of the first, second, third, and part of the fourth sacral nerves with the lumbo-sacral cord.

Rarely this nervous cord fails to join the plexus, but continues as a separate trunk down alongside the great sciatic, and becomes the peroneal nerve without having any connection with the former. Lefebvre and others have also shown that the fibers which mainly compose

the lumbo-sacral cord preserve their identity and are given off by the great sciatic as the external popliteal or peroneal nerve.

Thus we see that the exposed position of the fibers which ultimately form the peroneal nerve render them quite liable to injury whenever a labor is complicated by a large head, a contracted pelvis, a faulty position, or any condition which would offer resistance to the engagement of the head at the superior strait.

These cases should be treated as any severe neuritis. In the painful stage, rest in bed, bandages, and supports to the limb so applied as to limit motion as far as compatible with comfort are necessary indications. Hot, dry, or moist applications and gentle friction of the painful parts, with soothing applications are all useful. Morphine is to be avoided when possible. Codein with salicylate of soda, salol, or one of the analine analgesics will usually give comfort and assist the cure. Hot vaginal douches, and glycerine and ichthyol tampons do good. Iodoform suppositories per rectum seemed useful in the first case. The diet should be generous and nutritious.

As soon as the acute symptoms of neuritis begin to subside the limb may receive benefit from light massage and gentle electrical stimulation. Abdominal and general massage are indicated as nutritional measures. Mercurial inunctions and iodides often do good in this and the chronic stages. As soon as the soreness is gone, Faradism, Swedish movements, and gentle exercise, change of air, tonics, and generous diet are all to be considered.

In this connection I desire to speak of the remarkable effects often attained in neuritis by the use of hot-air baths limited, as far as practicable, to the affected part. I ordinarily recommend a very simple apparatus, which can be constructed as follows: Procure a pine box sufficiently large for the purpose and carefully line it with asbestos paper. Provide the box with a carefully padded aperture, through which the limb is passed and allowed to rest comfortably upon a swing of loose netting suspended from the top of the box, care being taken that no part of the limb is in contact with the inside of the box.

The box is arranged at a comfortable height to accommodate a sitting or supine posture. It should be provided with a thermometer to register the heat, which is conducted into the box through a tube with a flaring end, beneath which is placed a large oil-lamp or Bunsen burner. Quite a high temperature can be attained by this simple and inexpensive device. The degree of heat can be regulated by raising or lowering the generator beneath the funnel end of the tube. Most grateful is the

comfort given by the hot air to the cold, tender, painful, discolored, shining, and œdematous limb of neuritis.

Care should be exercised with the first baths, for as a result of nutritional changes painful burns might occur from a temperature which would in no way embarrass a healthy member. In anæsthesia the sensation of the member may be so obtunded as to be unconscious of a scorching temperature.

744 Prospect street.

INTERSTITIAL PREGNANCY, WITH REPORT OF A CASE OPERATED UPON THIRTEEN MONTHS AFTER CON- CEPTION.

BY ARCHIBALD MACLAREN, M.D., ST. PAUL, MINN.

Reports of tubal pregnancy are so common that they no longer excite our interest. Every medical magazine is filled with reports of these cases. It almost makes one believe that this disease is on the increase, so frequently do we encounter it, and undoubtedly many cases still go unrecognized.

Dr. Krug says that Dr. Forman of Philadelphia found thirty-five cases who died in one year from unrecognized ruptured tubal-gestation.

Full-term ectopic pregnancies, however, are not so easily mistaken, and they are still rare enough to be interesting. The frequency of full-term abdominal pregnancy in proportion to the ordinary run of extra-uterine gestation cases, is, probably, well shown by Dr. Bolt's experience, who found one full-term case in sixty-two operations.

My own experience would not come far from this same proportion, for, although I have not operated upon so many cases of tubal gestation as Dr. Bolt reports, still I have knowledge of approximately this same number of unreported operations, performed in St. Paul, and its vicinity, with only one case of full-term ectopic pregnancy, that I can now recall.

Interstitial pregnancy at any stage is a rare form of extra-uterine gestation. Martin's experience will prove this fact, for out of seventy-seven cases operated upon for all forms of ectopic pregnancy there was

only one case of interstitial pregnancy. Dr. John S. Parry of Philadelphia, in his classical work, reports 500 cases of extra-uterine gestation, thirty-one being interstitial. This is probably an overestimate, and several of Parry's *so-called* interstitial pregnancies were probably not so in fact. Our honored member, T. Gaylord Thomas, when President of this Society, in discussing this subject, reported two cases out of his vast experience. Mr. Tait says that up to the year 1890 there were only six specimens of interstitial pregnancy in the English museums: one in the Edinburgh College of Surgeons, one in the museum at Guy's Hospital; one in the museum of the University College Hospital, another in the museum of College of Surgeons, two in the London Hospital.

In interstitial pregnancy it is seldom that a case goes to full term, many authorities are inclined to take the ground that such pregnancies never do go to full term, but rupture some time before the sixth month.

Twenty-six cases of interstitial pregnancy, collected by Hecker, reported in Keating and Coe, all ruptured before six months. Tait says "that interstitial pregnancy is uniformly fatal from primary intra-peritonæal rupture before five months."

Bland Sutton says: "Interstitial pregnancy is very rare. Many specimens described as such are really pregnancy in an undeveloped horn of a unicorn uterus. Primary rupture may be delayed as late as the sixteenth week; rupture may take place either into the abdominal or the uterine cavities."

He does not believe that the sac ever ruptures into the broad ligament. "The sac sometimes ruptures very early, and in such cases death takes place from hæmorrhage in a few hours."

Playfair, in his ninth English edition, says "that a few cases are on record where rupture did not take place until the fourth or fifth month." Playfair further says: "Sexterph and Spiegelberg have reported apparently authentic cases in which interstitial pregnancy advanced to full term without laceration. Playfair doubts the accuracy of these observation—believing that these cases were probably of the sub-peritonæo-pelvic or secondary abdominal varieties.

On the other hand Gregg Smith, in his sixth edition, speaking of interstitial pregnancy says that "*first* it may rupture into the peritonæal cavity; *second* into the uterine cavity; *third* into both peritonæal and uterine cavities; *fourth* between the layers of the broad ligament, or the gestation may go on to the full term."

In my hurried and superficial review of the literature of this subject Gregg Smith is the only author who advances this opinion, although he

does not report any cases, still such cases must be on record, or he would not have dared, it seems to me, to have taken this position. That the case which I wish to present for your consideration is one of interstitial pregnancy, advancing to full term, must be conceded to be such, I believe, from the following facts:

Mrs. J. J. D., who had been under the care of Dr. W. F. Wilson of Lake City, Minn. Primipara; thirty years of age; married in the fall of 1896; never had conceived before; had her last menstruation November 15, 1897. During the first three months of pregnancy the history was negative, no unusual symptoms being present. On the 11th of February, 1898, the patient had a sudden attack of pain in the lower abdomen, some slight collapse, with nausea and vomiting, and later a slight hæmorrhage from the vagina which was accompanied by a shreddy discharge. Dr. Bailey of Lake City, who was called to see the patient, at this time, believed that she was threatened with a miscarriage.

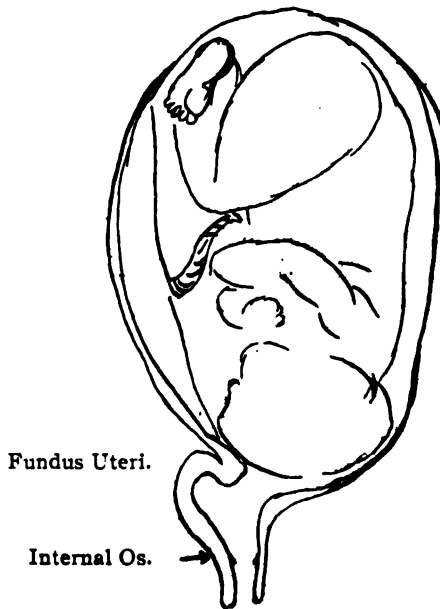
The abdominal pain continued for some three days, the patient being somewhat prostrated, but was soon able to be up and about. From this time on there was a progressive enlargement of the abdomen, which was more marked in the earlier months on the right side. Foetal movements were first detected April 1, 1898. There was no attempt at labor, however, until September 28, 1898, over ten months since the last menstruation. Dr. Dockstader of Lake City was in attendance, and from his description, the pain was regular and quite severe, continuing for about eight hours. There was no descent of the uterus or dilatation of the cervix at this time. About three days after this missed labor, the foetal movements ceased.

Dr. Bailey thought that he could hear the foetal heart-sounds as late as the middle of October. After November 1st there was a decrease in the size of the abdomen, and an apparent descent of the uterus. Dr. Wilson first saw the patient at this time. The child was evidently dead; there was no indication of labor. By abdominal palpation he was able to outline a portion of the child's body; the head was well down in the pelvis to the left, the limbs to the right side. The mother was in good physical condition; temperature and pulse normal; had had no chill or sweating. On December 2d Dr. Patten was called in consultation, and he suggested the idea of ectopic gestation. Two days after the consultation Dr. Wilson brought this woman to Dr. Park Ritchie of St. Paul, and left her in his care at St. Luke's Hospital.

It was now nearly thirteen months from the time of the last menstruation. The patient was commencing to show signs of exhaustion, and

it was evident that an attempt should be made to deliver her. On December 9th and 10th attempts were made to pass a bougie into the uterus. Dr. Ritchie was only able to pass a bougie four inches, when he seemed to meet a solid obstruction. I was then called in consultation with Dr. Ritchie, and advised that we should examine the patient under an anæsthetic, and if possible start her in labor. On December 12th this woman was chloroformed, and the following conditions found to exist: Temperature 101°, pulse 120; the cervix was long and tubular, lying in the center of the pelvis, and passing up and being lost in the general abdominal enlargement which contained the child.

The cervix was grasped with a volcellum forceps, a sound was



Schematic drawing of the uterus and child in the interstitial sac.

passed into the uterus, when it was slightly deflected to the right side, at a depth of four inches it met with firm resistance—evidently the fundus of the uterus. The uterine cavity was quite roomy. Exploring it further the sound entered almost without any resistance the cavity of the foetal sac through an opening, at least one inch in diameter on the left side of the uterus, corresponding to the point of entrance of the left Fallopian tube. The sound was passed some six inches into this cavity, rupturing the membranes and allowing the evacuation of at least

a quart of dark-brown amniotic fluid. The cervix was now dilated as thoroughly as possible with instruments, but I was still unable to reach the depth of the uterine cavity, until, with scissors, I divided the cervix on either side as high as the internal os. I was then able to pass the finger into the uterus, and, through the opening, on the left side, could palpate the child's head and feel the hair upon its head.

The uterus, cervix, and vagina were now thoroughly packed with sterilized gauze, and the woman was put to bed with the belief that this was a uterine pregnancy, and that she would be able, now, to deliver herself.

Early the next morning she had a severe chill, followed by a temperature of $103\frac{1}{2}^{\circ}$ and a pulse 140, and was evidently a very sick woman; she had had no labor-pains during the night, and it was determined that an abdominal exploration was necessary. Just as we were ready to administer the chloroform she had a decided true uterine pain, which lasted three minutes. I happened to be standing by her side at the time, and put my hand on the abdomen, felt the hard contraction, followed by the relaxation of the abdominal tumor as the pain disappeared. Believing that labor had at last started, the operation was postponed until two o'clock that afternoon. Her temperature and pulse were very bad, and the woman was evidently septic. There having been no attempt at labor at two P.M. on the afternoon of the 13th, she was again prepared for laparotomy. I was assisted by Drs. Park Ritchie and W. F. Wilson. It was decided to make an abdominal section and if possible to do a Porro, on account of the known septic condition of the uterine contents. The packing of the vagina, cervix, and uterus was first removed showing absolutely no advance in this direction. There was a very free hæmorrhage from the cervix and uterine cavities. The uterus and cervix were quickly repacked, and the two lips of the divided cervix were united with sutures over the gauze. Median laparotomy demonstrated a thin-walled sac, closely adherent to the anterior abdominal wall. The free peritonæal cavity was slightly opened at the upper angle of incision; this opening was quickly closed with two or three catgut sutures. A gangrenous twelve-pound perfectly developed male child was quickly delivered, and the cord was divided. The placenta was hard and leathery, and so strongly adherent to the foetal sac that I did not dare to remove it, for fear of tearing the sac. The patient's pulse was running over 150 at this time and of a very bad quality. Normal saline injections were used under both breasts; the cavity was packed with iodoform gauze, the wound being left wide open, and the patient put to bed. Forty-eight hours

after this operation the patient was again chloroformed and the stitches in the cervix were removed; the gauze was withdrawn; the hæmorrhage was quickly stopped with a hot-water injection; then the offensive gauze from the foetal sac removed; the sac was irrigated and repacked with iodoform gauze; and this was repeated once a day. On the 18th, or five days after the operation, the placenta was still as hard and leathery as ever, and showed no signs of coming away. At the suggestion of my friend, Dr. Will Mayo, I tried the effect of bovine upon this placenta, with the happiest results. After sponging out the sac I poured about two or three ounces of bovine into the sac over the placenta, almost immediately was able to push my finger through the placenta in any direction. On the 20th, after three applications of bovine, the placenta was entirely removed. When the cavity had thus been entirely cleaned out, free from membranes and shreds of the placenta, it was very easy to see the muscular fibers of the sac wall, which became more numerous and prominent as the sac approached the uterine horn, and then after the removal of the placenta I was also for the first time able to demonstrate the opening below the edge of the placental site into the upper part of the true uterine cavity.

By mistake the daily packing of the sac was continued with iodoform gauze, so that on the 28th of December I found this woman with a temperature of 98, and pulse of 150; vomiting constantly; with high-colored urine. No iodine was found in the urine, but was very apparent when the saliva was examined. The patient was very sick for four days, but eventually entirely recovered. This patient was sent home to her family physician early in January. Two months later Dr. Wilson writes me: "The wound seems to have entirely healed, the cavity is obliterated, and there seems to be no evidence of ventral hernia, but I am taking the precaution of having her wear an elastic abdominal supporter."

I believe that this case was an interstitial pregnancy. First, because of the missed labor and death of the child. Next, because I was able to rupture the membranes without perforating the uterine wall, through the cervix, and was also able to pass my finger up through the uterus into the opening between the sac and the uterine cavity and distinctly feel the hair on the child's head. Again, the sac, although thin and closely adherent to the anterior abdominal wall, was thicker behind and below, where it merged into the uterus. That this sac contained muscular fibers was very apparent to all who saw the dressing after the removal of the placenta.

And, lastly, I was able after the removal of the placenta to demonstrate the connection between the sac and the uterine cavity through the abdomen.

The only other case of interstitial pregnancy which I have ever seen was a post-mortem specimen presented to the St. Paul Medical Society, some twelve years ago, by Dr. Albert E. Senkler of St. Paul. In this case a young woman, some thirty years of age; III Para; menstruated last some six weeks before the rupture, which caused her death. From the first evidence of shock to her death was only thirteen hours. This is, I am sure, a very common ending of interstitial pregnancy.

Dr. O. G. Pfaff of Indianapolis reports an extremely interesting case, well illustrated by a photograph of the specimen, which he had operated upon for an unruptured interstitial pregnancy of about the fifth month. He incised the thin-walled sac at its summit, coming directly down upon the placenta; he then thrust his hand into the wound, turning out the contents of the sac—placenta, membranes, and foetus—intact. Freedom from an alarming hemorrhage from the sac was one of the most remarkable features in this case, which he attributes, in part, to the contraction of the bag, but largely to the firm pressure upon the left broad ligament, of a large clamp. No opening whatever into the uterine cavity could be detected.

The sac was stitched in the lower angle of the abdominal wound. There was considerable seepage though the glass drainage-tube for the first two days, but this was so slight that on the fifth day the margins of the wound were drawn together and the patient recovered. As Dr. Pfaff says, this case was unique from a surgical point of view.

Only a word regarding the treatment: Bland Sutton advises that abdominal hysterectomy is the safest method of treatment.

Peter Tytler has reported, in the *British Medical Journal* of June, 1897, a case operated upon for rupture of an early interstitial pregnancy, treated by the immediate suturing of the fissure. In this case the rent extended from the center of the fundus to the origin of the left Fallopian tube. The wound in the fundus was washed out, and closed with four fishing-gut stitches.

Dr. Tytler apologizes for this line of treatment, saying that he was not aware, at the time, that the uterus should have been removed. The patient, nevertheless, recovered, and still has her uterus. Considering the fact that Dr. Pfaff's case was treated much after the same fashion, perhaps we may find that the uterus can be saved in many of these cases.

In my own case the septic character of the contents had caused the adhesion of the sac to the anterior abdominal wall, and hysterectomy under the circumstances would have been clearly unjustifiable. I would also commend to you bovine in a similar case. It certainly had a very marked effect in decreasing the odor, cleaning out and softening the membranes and leathery placenta.

It was suggested on account of its excellent effect in cleaning up old granulated ulcerated surfaces, and preparing them for skin-grafting. It is even more rapid and efficacious in this respect than the yeast poultice. And I can but compare the long, tedious convalescence of one of Dr. Thomas's cases of abdominal pregnancy, which I helped to take care of in the hospital, some fifteen years ago, with my own.

In Dr. Thomas's case we used almost constant irrigation, and it took nearly a month to wash away the placenta. In this case the sac was perfectly clean on the 8th day.

And, finally, I would call your attention to the very narrow escape from death which this patient had from iodoform poisoning, after she had practically recovered from the operation.

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EDITORIAL.

PLASTIC SURGERY.

Surely no branch of gynecological work is so frequently indicated by the pathologic conditions to which women are subject as this and, with equal certainty may it be said, that none has been so neglected by gynecologists, none so little understood and appreciated and none in which experts are so few. Owing to the immunity from a fatal result which the conditions of plastic surgery generally carry with them, the bungling failures and the consequent suffering inflicted upon patients in its name, though not partially reported though they be, are appalling. Certainly it is no exaggeration to say that, were a tenth part of the ignorance of principles and technique turned into practice in abdominal operations, the humane sense of the profession would forbid the performance of laparotomy.

Let us consider for a moment the attitude of gynecologists towards plastic surgery. It is interesting and instructive. First, among the younger men it is very, very rare to find one who will hesitate a moment to undertake any recognized plastic operation, even though he have never seen a similar one done and is avowedly without experience in such work. Though profoundly ignorant of why such an operation is indicated in such a case, and totally oblivious of the mechanical difficulties involved, it is sufficient for him that such operation has been declared as the indication for the pathological condition which he recog-

nizes. He does the best he can under these toward circumstances and feels justified.

The attitude of the older men, who have themselves gone bravely through the stage just described, is quite the reverse of this. To many of them one thing has become very clear: Either they have failed to meet the expectations of plastic surgery or it has generally failed to meet theirs. Very naturally the latter horn of the dilemma is almost universally adopted and this aspect of the question is to-day openly taught, as we have already had occasion to point out in some recent editorials. Thus, plastic surgery is described as "Minor Surgery," for its belittlement, and receives the grudging acknowledgment that it is sometimes a necessary makeshift for those common and very frequent conditions for which it and it alone is the indication. But the stronger and more positive minds are not satisfied with seeing an indication whose neglect is a standing reproach. Unable either to fulfill or to obviate this indication, they have gone abroad, like certain industrious members of the animal kingdom, for means to bury it out of sight and leave a clear road. To this endeavor we owe the adoption of Alexander's operation and all the various methods of suspension for prolapsus uteri due to laceration of the pelvic floor. To the same category belong Lefort's operation and others of similar purpose. But of all these methods the most straightforward and logical, whose ideal simplicity indeed never ceases to excite our admiration is vaginal hysterectomy for prolapsus uteri. It is most ingenious and admirable—from a certain standpoint. At one stroke it removes not only the disease but the indication as well. It settles the question and leaves nothing to be said—or done.

Yet, while this cinematograph truthfully depicts a very large number of gynæcologists, who stumbling over plastic surgery in their youth have bungled it through their middle years till the irritation of shame has forced the cry of failure, we must not forget that there is another moving as steadily in an opposite direction. There we may see men who seriously undertook the study of plastic surgery in the outset of their career and who, recognizing the difficulty of acquirement, have earnestly devoted themselves to the mastery not only of the mechanical knowledge necessary but to the special technique. Such men now count upon the certain results of plastic operations with almost mathematical accuracy. They may predict with certainty not merely a symptomatic cure but an anatomical one. And the indication of the disease is squarely met and completely fulfilled. It is neither ignored, covered up nor *ablated*.

Consider the requirements of the expert plastic surgeon: He must have an exact knowledge of the anatomy and pathology of the pelvis and a *correct* comprehension of its physiology. His extensive mechanical knowledge must be instinctive as well as acquired, for no two cases present exactly the same conditions to be remedied by plastic work. He must have years-acquired facility in using his instruments—a combination of strength, endurance and great delicacy of manipulation. He must have an abiding sense that his aim is not to remove but always to restore. And finally he must love his work for the opportunity it affords him to restore a mutilated part almost to that perfection which it originally received from the Master Hand.

It is this realization of the great and peculiar requirements necessary to the making of a plastic surgeon *in fact*, which endows this special work with a dignity possessed, in our opinion, by no other branch of gynæcology.

CORRESPONDENCE.

THE CARBOLIC ACID TREATMENT OF TETANUS.

BROOKLYN, N. Y., July 18, 1899.

Editor of the American Gynæcological and Obstetrical Journal:

SIR: The City of New York and vicinity are infected, lately, by cases of tetanus.

Antitoxine treatment has been completely unsatisfactory.

Kindly explain to me the reason why the physicians attending such cases do not make use of carbolic acid hypodermically?

This question is of the greatest importance, whenever we consider what brilliant results have been obtained in Europe by this method of treatment.

Professor Baccelli of Rome, originator of this method of treating tetanus, gave the rules for its application. Upon the proper observance of these rules depends the success or failure of the cure.

That has been positively confirmed by many prominent European authorities.

C. MONDINI, M.D.

409 Union Street.

NOTE.—We would be glad if some of our readers who are conversant, from personal experience, with Professor Baccelli's treatment would answer our correspondent's seasonable and apparently reasonable inquiry.—EDITOR.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Stated Meeting, May 9, 1899.

The *President*, WILLIAM R. PRYOR, M.D., in the Chair.*Epithelioma of the Vulva on a Kraurotic Basis.*

Dr. JOSEPH BRETTAUER showed a patient with the following history: Mrs. D. L., sixty-five years old, had one child forty-two years ago, no miscarriages. Immediately after her confinement an inguinal hernia appeared, for which she is obliged to wear a truss. For twenty years she has had a fibroid of the uterus, reaching up to the umbilicus, which, however, had not increased in size since it first was noticed, nor has it caused any material discomfort to the patient.

About a year ago the patient presented herself, complaining of intense pruritus about the vulva. She showed then typical macroscopic features of kraurosis. The urinary examination was negative. She was placed on appropriate treatment, but did not seem to be much benefited. She disappeared from observation for a considerable time, and again presented herself about four weeks ago with very much increased symptoms of pruritus. Examination now disclosed about half an inch to the left of the atrophic clitoris an ulcerating growth about the size of a hazel nut. This ulcer was slightly elevated, with sharp edges and some infiltration in the surrounding tissue. Just opposite, corresponding to the point of contact, were several fissures, also at the fourchette and anus. The rest of the vulva appeared atrophic, and of a grayish color.

Though no history of a syphilitic infection was present, the patient was put on an antisyphilitic treatment for several weeks without any results, and the diagnosis of epithelioma was made positively, though without the aid of the microscope as yet. I propose to excise the whole vulva, and report later on the result of the microscopic examination.

DISCUSSION.

Dr. ABRAM BROTHERS: I find scars about the vulva which indicate that similar ulcerations have existed and healed; therefore, I am in-

clined to think that the lesion is a late manifestation of syphilis. I would certainly keep the patient under antisyphilitic treatment for a time.

Dr. W. EVELYN PORTER: I would like to ask if the fissured condition of the perinæum has existed for any length of time?

Dr. S. MARX: The ulceration looks to me like an old syphilitic lesion, and, in the absence of any microscopical examination, that is the diagnosis which I would make.

Dr. T. W. CLEVELAND: I also am of the opinion that this is an old syphilitic lesion, and would watch the effect of antiseptic treatment.

The PRESIDENT: There is one thing to be remembered in regard to these old syphilitic lesions of the vulva, and that is that they invariably present a marked loss of tissue. I have seen nine such cases, and in none of them was there a raised surface along the edges of the ulceration, as in the case Dr. Brettauer has just shown us. I am rather inclined to differ from the rest of you, and state that it is an epithelioma. It has a well-defined boundary, but no marked loss of tissue such as is usually seen in syphilitic lesions of this type.

Dr. BRETTAUER: In regard to the fissures around the vulva, I do not think these have anything to do with the ulceration but are the effect of violent scratching. The woman is now under specific treatment, but, in the absence of any history of early or late syphilis, I am inclined to consider the condition an epithelioma. I will keep her under treatment for some weeks, and will then, if there is no improvement, remove the vulva and report further.

Dermoid Cyst of the Ovary.

Dr. BROTHERS: These specimens were removed last summer from a woman who had given birth to five or six children. The larger one, which was of considerable size at the time of its removal, is a dermoid cyst of the ovary, containing a large mass of hair, a quantity of sebaceous material, and one free tooth. The other specimen is the opposite ovary, which was enlarged, and contained an opalescent liquid, but absolutely no ovarian tissue. The woman gave a distinct history of dystocia at each of her labors, it being necessary to push the tumor up and deliver the child with forceps.

Rupture of an Early Tubal Gestation. Laparotomy: Recovery.

Dr. ABRAM BROTHERS: Mrs. X. W., æt. 24; married fourteen

months. As a girl she suffered very much from irregular uterine bleeding, so that three years ago she was twice curetted under anæsthesia. On these occasions the adnexa seemed to be normal. The bleedings continued, however, and it was necessary to subject her to a course of intra-uterine galvanization before they were controlled. She remained perfectly well, excepting certain suspicious pulmonary symptoms, which were suggestive of incipient phthisis. A little over a year ago she married, and enjoyed very good health up to six months ago, when she consulted me because of pelvic pains, especially severe on the left side, and elicited principally during sexual intercourse, and on the first day of menstruation. It seemed to me at the time that the abuse of bicycle exercise was in great measure responsible for a pelveo-peritonitis, which presented no discoverable physical signs. The uterus alone—which was small and anteflexed—seemed to be fixed, and painful on manipulation.

She was placed on routine treatment, consisting chiefly of vagino-abdominal galvanization, tampons, douches, and the various hygienic measures which conditions seemed to call for from time to time. Eight weeks ago she felt so perfectly well that she, at my suggestion, suspended all treatment.

Two weeks ago (April 25, 1899) she presented herself at my office. She had not seen her period in six weeks, the first delay in her life, as her periods otherwise were, without exception, anticipated. She had colicky pains on the day preceding, and had decided to call on me. On the elevated cars she was taken with agonizing cramps, and, although she did not faint, it was quite an effort for her to walk the little distance from the station to my office. When I saw her, about a half hour later, she seemed to be writhing in the most violent of pains. Her menstruation, which had appeared in spots on the preceding day, again showed. After giving her a hypodermic injection of $\frac{1}{4}$ -grain of morphine, I attempted to make an examination, but found the lower abdomen so exquisitely sensitive that I yielded to the patient's urgent solicitation to desist. Leaving her on a sofa in one of my private apartments under the supervision of my office-nurse, I told her that I considered it necessary to have her subjected at once to an operation. She begged for a little delay. After two hours she decided to go home in the company of a lady, as she was feeling "all right," and consult with her husband. I ordered her to go straight to bed.

As soon as practicable I communicated with her brother, a physician of eleven-years' experience, whose opinion I very much respect, and laid the facts of the case before him. He agreed with me that the

diagnosis of ruptured ectopic gestation was very probable, and that his sister was in a grave condition. Yielding to the importunities of other members of the family, Dr. Skene of Brooklyn was consulted, and he advised an immediate exploratory section.

On April 28th the patient was carefully transported from her home in Brooklyn in a private ambulance. Immediately on her arrival at the St. Mark's Hospital she was prepared for operation. Her pulse and general condition were good. On incising the abdominal wall the peritonæal cavity presented a moderately large quantity of free blood and black clots. The left tube and ovary were brought up and found to be considerably swollen, the tube being distended to a diameter of nearly an inch, and the ovary being probably four times its normal size. After hastily examining for the point of rupture, and failing to find it, I amputated the diseased adnexa, ligated the larger vessels individually with catgut, and brought together the edges of the broad-ligament stump with a running catgut suture. The adnexa of the opposite side were next examined, and found to be healthy. With several pitcherfuls of sterilized water the peritonæal cavity was thoroughly flushed and cleansed of free blood and clots. The abdominal wound was then entirely closed without drainage by means of three rows of sutures.

From the time of the operation down to the present moment (twelve days later) the temperature has not exceeded the normal by a degree nor has the pulse at any time been above 108 to the minute. On the tenth day I changed the dressing and found primary union. Excepting some tenderness on the opposite side (right side) the patient seems to be perfectly well.

The specimens are being examined microscopically by Professor H. T. Brooks. We have decided from the gross examination that we are not dealing with a case of tubal abortion, but with one of early rupture in a tubal gestation-sac. The portion of the specimen which I have the honor of presenting to-night shows a corpus luteum of pregnancy in the ovary.

Taking all the facts together, the pregnancy could not have gone beyond the fifth or sixth week, and is another illustration of the early period at which an ectopic gestation may go on to rupture.

DISCUSSION.

The PRESIDENT: In the period of doubt in regard to the diagnosis in these cases, vaginal incision will quickly clear it up. If the vaginal method of operation has done nothing else, it has made it possible to

make the diagnosis in suspected cases of ectopic pregnancy at once and without danger to the patient. I saw two cases last year which gave all the subjective symptoms of ruptured tubal pregnancy except exsanguination, but which, upon vaginal section, proved to be nothing of the kind. Instead of waiting for the rapid pulse and exsanguination which accompany ruptured ectopic gestation, it is much better to make an exploratory vaginal section at once.

In early cases of tubal gestation, it is a question to my mind whether we should remove the tube or whether we should not open it, scrape it out, sew it up, and leave it. There need be no fear of hæmorrhage, for the bleeding is only a parenchymatous oozing. I see no more reason for removing the tube in these cases than for removing the uterus after abortion.

Dr. EGBERT H. GRANDIN: To my mind it is a question whether this case was one of ruptured tubal pregnancy. I see no evidence of rupture of the tube in the specimen. I am inclined to think that it is one of tubal abortion, which, I am satisfied, is of common occurrence. Many women have tubal abortion without the symptoms becoming severe enough to necessitate operation. This tube does not look to me as if it had contained a six-weeks' gestation; that is, it does not resemble those which I have seen heretofore. I do not question that the patient's symptoms were of such a nature as to require immediate operation, or that the findings justified it; but I do not think that the specimen will justify the diagnosis of tubal rupture—rather that of tubal abortion, as the term is now understood.

Dr. BRETTAUER: I would like to ask Dr. Grandin to give us his definition of tubal abortion.

Dr. GRANDIN: To my mind, tubal abortion is a condition in which the ovum, impregnated within the tube, escapes through the fimbriated extremity of the tube into the free peritonæal cavity. I make a distinction between tubal abortion and tubal gestation. I have seen many cases in which the patient misses a period, and shortly afterward has symptoms of tubal abortion. Escape of the impregnated ovum through the fimbriated extremity of the tube is just as possible as transmigration of the spermatozoa from one side to the other.

Dr. BRETTAUER: The term tubal abortion implies, to my mind, that pregnancy has taken place within the tube, and its product been expelled either through the abdominal or uterine end of the tube. There surely is a vast anatomical and pathological difference between rupture and abortion, but clinically it is most often impossible to make the exact diagnosis.

Dr. GRANDIN: There is not only an anatomical and a pathological difference, but also a clinical difference. In one condition we have rupture of an organ and its artery and consequent hæmorrhage. In the other we have a very small body slipping through the end of the tube, carrying with it, perhaps, a certain amount of detritus and blood. There is nothing novel in what I am telling you. Everybody recognizes the difference between rupture of the tube and the simple exuding of the ovum through the end of the tube. Many women have tubal abortion and recover without operation. And yet the consequences of tubal abortion as regards the amount of blood lost may be similar to those of rupture of the tube. In the latter, however, hæmorrhage is apt to be progressive, and the symptomatic picture graver than in the former, where the hæmorrhage is apt to cease on extension of the ovum (certainly in the early weeks).

Dr. PORTER: I would like to ask Dr. Brothers whether he found much blood in the pelvic cavity.

Dr. BROTHERS: I have never yet been present at a medical meeting at which the subject of extra-uterine pregnancy was brought up without a wide diversity of opinion being expressed. The specimen which I have shown you is certainly one of tubal gestation, as is clearly shown by the clinical history.

I will not at this time argue as to whether it is better to explore these cases from above or below. In this case I opened the abdomen, and found from one to two quarts of free blood and a number of black clots. I carefully examined the tube, and found no clots in its fimbriated extremity. In the several cases of tubal abortion which I have seen clots have invariably been found in the fimbriated end. Moreover, in this case there was an enlargement of the middle of the tube, while the fimbriated extremity was undilated. I concluded that there was a minute rupture of the sac. I regret that this has not yet been accurately determined, but the pathologist has not yet reported on the specimen. As a further evidence of the existence of gestation, the corpus luteum of pregnancy was present in the ovary.

In regard to clearing out the tube in these cases and leaving it, it seems to me that a woman who has been suffering from tubal disease for years will be better off if the tube and ovary are removed. In my case the opposite tube and ovary were perfectly healthy, and were left.

Examination was impossible, except under anæsthesia, when a cystic tumor the size of an orange was felt to the left of the uterus, the organ being immovable. Cœliotomy at the General Memorial Hospital five weeks ago. General intestinal adhesions. In attempting to

free the tumor it ruptured, and two or three ounces of offensive pus escaped. A pyosalpinx and ovarian abscess were removed, and the cavity was flushed with several gallons of saline solution, then a pint of pure peroxide of hydrogen was passed into the pelvis, and followed by saline solution.

A hydrosalpinx and large cystic ovary were removed from the right side.

While separating the end of the left tube from the descending colon a smooth, glistening body the size and shape of a large bean escaped and was removed from Douglas's pouch. It was apparently contained in a cavity at the fimbriated extremity.

Gauze tamponade of the pelvic cavity, the end of the strip being carried into the vagina.

Convalescence afebrile, but retarded by a mural abscess. Patient up at the beginning of the fifth week. Bacteriological examination of the pus showed that it contained staphyococci and streptococci.

The foreign body was hard when first removed, but floated in water, and became softer after soaking for a month in formalin solution. The reporter inferred that it consisted of inspissated caseous material, possibly infiltrated with lime-salts, and suggested that it be referred to the pathologist for examination.

He called attention to a reference in the *Centralblatt für Gynäkologie* (No. 52, 1898) to certain "tubal calculi," described by Littauer. These were found free in Douglas's pouch during an operation for the removal of a diseased tube. A concavity was seen in the fimbriated end of the tube in which it was inferred that they had been contained. They were of stony hardness, the largest being the size of an orange-seed. On examination they were found to consist of fat infiltrated with lime-salts.

Report of Pathologist.

The small particle found free in the fixing solution is a lipoma which has undergone a slight degree of calcareous degeneration. It appears to have been completely enclosed by a thin fibrous capsule which here and there is covered by cells somewhat resembling epithelium, of a low, flat type, though over the greater part of the surface such cells are entirely wanting.

The left tube shows an acute salpingitis, and the other is merely distended as it was engorged with a clear serous fluid.

Ovarian Calculus.

Dr. H. C. COE showed a specimen with the following history: Mrs. F., æt. 41, married twice, the last time a year ago. No children. She had had two attacks of peritonitis, one last June and one in January of the present year. The first attack was diagnosed as appendicitis. She suffered with more or less constant pain in the lower abdomen, most marked on the left side. Her most marked symptom was intractable sciatica on the left side.

The secretary presented for Dr. LEROY BROWN a series of temperature charts of hysterectomy cases in which the angiotribe had been employed.

Neoplasms interfering with Pregnancy, with Report of Cases.

By E. E. TULL, M.D.

(See page 137.)

DISCUSSION.

Dr. COE: The author has called attention to an important obstetrical point, *viz.*, the progress in these cases, and this is exceedingly difficult to determine. This was impressed upon my mind a few days ago while watching a case of labor in a patient who has several fibroids. I saw the case in consultation early in pregnancy; it had been suggested that the uterus be emptied, but I advised the attending physician to wait and watch the case closely. There was a large fibroid at the fundus, one low down on the left side, and another, as large as an orange, in the lower segment of the uterus anteriorly, which could be lifted out of the pelvis. Pregnancy progressed normally, and from time to time it was reported to me that she was doing well, and that the tumor in the cervix was gradually rising so that the head could be pushed past it. She was delivered at term after an absolutely normal labor. The puerperium was afebrile (three months later pregnancy was suspected).

Impacted tumors and fibroids in the lower segment of the uterus are most important for they give the most trouble, while subperitonæal growths of large size may not interfere in the slightest degree with delivery. There is, of course, danger of hæmorrhage. Dr. Jarman will recall a case in which we were obliged to do Cæsarean section because of a tumor, not larger than an orange, which was so situated as to re-

duce the conjugate to two and one-half inches. The position of the tumor is of more importance than its size. Dermoid cysts in Douglas's pouch, especially if adherent, are very troublesome. At times they can be pushed up out of the way during labor. In the case referred to by the author, the cyst had suddenly become twisted upon its axis, as well as becoming impacted. Severe pain and pressure-symptoms developed, and the temperature began to rise. The appearance of the specimen shows how completely the circulation in the pedicle was interrupted, and the cyst would doubtless have become gangrenous in a few hours.

In regard to operating upon pregnant women, it is surprising how much manipulation the gravid uterus will stand. So long as we do not invade the uterine cavity we can handle it pretty roughly. In one of the cases referred to by Dr. Tull I ran several rows of deep and superficial sutures through the wall of the uterus. In doing *coeliotomy* upon pregnant women we should remember that the cicatrix will be subjected to unusual strain so great that care must be exercised in suturing the different layers.

Dr. HORACE TRACY HANKS: Some years ago, when I was president of this Society, I prepared and read a paper upon fibroid tumors complicating pregnancy. The mortality following operative interference to-day is very much lower than it was at that time. This is due to clean surgery and improved management of the pedicle. There was a very interesting case at the Woman's Hospital when Dr. Coe was house-surgeon; a large ovarine cyst was removed from a pregnant woman who recovered, although the uterus had been punctured accidentally. Six weeks after she returned home she miscarried, probably because she had been working very hard taking care of her children, who were ill with scarlet fever. I have seen several cases in which tumors were safely removed from pregnant women. In one case a tumor was an enormous fibroid, and the woman eight-months' pregnant, but she went to full term, and was safely delivered. To-day we do not expect these women to die, nor do they. We can check excessive hæmorrhage, etc.

The subject is of special interest to the general practitioner, and he should remember that, while it is not ALWAYS necessary to remove the obstructing tumor, it is sometimes imperative to operate; therefore, he should seek the advice of a competent gynæcologist. Personally, I have delivered safely and without serious trouble half a dozen women who had tumors. If the tumor is in the upper zone of the uterus we will have no trouble in controlling the hæmorrhage which may follow.

And the cervical canal can always be dilated and forceps applied if the head does not come down.

Dr. S. MARX: I think the keynote of the situation has been struck by the remarks of the speaker who preceded me. Some years ago I made the statement that we *might* be justified in inducing labor in order to avoid possible hæmorrhage. As a rule, hæmorrhage from the uterus can be checked by a properly applied uterine tamponade. Fibroids in the lower zone always cause dystocia, and should be removed. There is as little danger in doing laparotomy upon a pregnant woman as upon one who is not pregnant, except, of course, the possibility of bringing on abortion. This danger depends primarily upon the surgeon, and secondarily upon the proximity of the tumor to the pregnant uterus. The more roughly the uterus is handled the greater the danger of inducing labor; the nearer the tumor is to the uterus the greater the danger of abortion occurring.

During the past two years I have done half a dozen abdominal sections upon pregnant women, and none have aborted. I have also done several appendix operations, and of these one aborted and also died. I have had some extremely interesting cases. One, in particular, was a young woman in her first pregnancy, and within two months of term. She was seized with what were apparently labor-pains, and summoned her physician, who pronounced her in labor and the presentation a breech. He sat there waiting for twenty-four hours, and then called me to see the woman. I was unable to find the cervix, but found an enormous fibroid uterus, and suggested immediate Cæsarean section, but the patient was not in labor. The patient was hurriedly removed to Mt. Sinai Hospital, where Dr. Brettauer operated upon her. She made a good recovery.

About three months ago I was called to see a woman at term. The posterior cul-de-sac was filled by a fluctuating tumor. I put the patient in the knee-and-chest position, and administered chloroform, with the result that the tumor immediately disappeared and the child easily delivered. Six months later a very large ovarian cyst was removed. If these cysts are very large they should be removed during pregnancy, for there is always danger either of rupture occurring at the time of labor, or their causing an absolute dystocia during this time.

Dr. HORACE TRACY HANKS: I recall a case which is worth remembering. It was one of fibroid tumor of the cervix, which I saw in consultation with Dr. E. C. Billington. The woman was at full term, but it was impossible to force down the head of the child on account of the tumor, which was as large as my two fists, near the os internum. The

child was finally delivered with forceps after the tumor had been pushed well up above the brim. Soon after the patient again became pregnant, and entered the Nursery and Child's Hospital, and the house-surgeon wrote to me for a history of the case, and informed me that there was then no tumor to be felt. Here is a case in which it is absolutely certain that a tumor was absorbed during the last few months of pregnancy. She had been seen by me, by Dr. T. G. Thomas, and by C. C. Lee only six weeks before, when the tumor was present in its former site.

Dr. W. GILL WYLIE: The treatment of fibroids has been so well marked out that we know what to do in any given case. I think, however, that cases in which pregnancy is complicated by an old salpingitis are especially difficult to deal with, particularly those in the tubes are filled with material more or less septic. I have had several such cases, and by closely watching them have been able to carry the patient to term in almost every instance. The only guide was the amount of pain the patient could stand. Temperature would be an indication for operation. There is but little risk in operating upon pregnant women; much less than inducing labor as it was done some years ago. I have at present under observation a patient who is pregnant seven months, and who has severe symptoms of adnexal disease. She was sent to me some time ago for the purpose of having one or both ovaries out, but she improved so much under treatment that it was decided not to operate. Since she became pregnant all the old symptoms have returned, and it is a question whether she will be able to go to term without operation.

The difficulty is largely one of diagnosis, and the outcome will be as it has been in ectopic gestation. Not many years ago many women died because the condition was not recognized, while now the general practitioner is capable of making the diagnosis. It will be the same way with conditions complicating pregnancy. They will be recognized and the patient treated accordingly. I think, as a rule, that too little attention is given by the gynecologist to obstetrics. A great deal of our expert ability in diagnosis can be applied with advantage to the patient both before and after labor in both normal and abnormal cases.

Official Transactions.

JOSEPH BRETTAUER, *Secretary.*

TRANSACTIONS OF THE AMERICAN GYNÆCOLOGICAL
SOCIETY.

Annual Meeting, May 23, 24, and 25, 1899.

(An Excerpt.)

*Inversion of the Uterus.**

BY B. BERNARD BROWNE, M.D., BALTIMORE.

(See page 115.)

DISCUSSION.

Dr. ANDREW F. CURRIER of New York: I have listened with great interest to this paper. The historical portion of it is most excellent. The glare and glamor of operative technique have caused us to lose sight of the importance of educating men in the history of our science and art. During the last year or two at least one college in this country has realized the importance of the subject, and has given it the attention it deserves. A voice should go forth from this body that this subject should be developed and encouraged.

In regard to the technical part of the paper, the method advocated by the author is well conceived and carried out, but its difficulties are apparently greater than those of the Thomas operation. The latter seems to me the operation of choice, the danger not being materially increased by the abdominal section.

Dr. HENRY C. COE of New York: Dr. Currier has touched upon a practical point when he speaks of *cœliotomy* in these cases. I believe that it is directly in line with modern surgery to open the abdomen to stretch the ring from above as soon as it is evident that taxis will not result in success. This was done in the case to which I alluded in my paper, and it taught me that one should not lose time in useless and injurious manipulation. At the present time it is so safe to open the abdomen that this should be done. In old cases there is apt to be some pathological condition of the tubes or ovaries, or intestinal adhesions, which can only be appreciated by actual sight. Exploratory section should certainly not be reserved as the *dernier ressort*.

Dr. HOWARD KELLY of Baltimore: The paper is interesting from all standpoints, but especially so is the biblical reference in regard to the Hebrew women. It is by no means certain, however, that the verse quoted has been correctly translated from the original. There was some discussion upon this point in the early part of this century, and it was then said that the sentence "*when the women are confined upon the stools*" may also be translated "*when the women are confined by the stones*," referring to the testicles of the male children which were to be destroyed by the midwives.

As to the method of operation, I should unhesitatingly resort to Kuestner's method in any case seen in future. About twelve years ago I opened the abdomen with a view to dilating the ring in the manner described by Dr. Coe, but I found that I could not dilate it in this way, nor could I get the uterus through it without doing much damage to the parts. I therefore amputated the uterus and removed it per vaginam. I believe that we should follow the directions of Kuestner and cut the ring, when, as he expresses it, the uterus will go back "as easy as play."

Dr. CHAUNCY D. PALMER of Cincinnati: I did not have the pleasure of hearing the author's paper, but I have had considerable experience with inversion of the uterus. Several years ago, when I had a large obstetrical practice, I saw twelve or fifteen cases of acute inversion of the uterus, and in every instance the woman had been delivered by a midwife. We have in Cincinnati seven or eight thousand deliveries every year, and most of the cases—some seventy per cent.—are attended by midwives. I was often sent for to assist them in cases of difficult labor. All the cases of acute inversion were seen within the first few hours after their occurrence, and I had no trouble in completely replacing the uterus, by placing the woman upon her back, elevating the pelvis, and indenting the fundus with my thumbs. I always found that if I could indent it half an inch I could speedily replace it. The same procedure may be employed in old or chronic cases, but not always so successfully. In three cases of the latter type I was not able to replace the uterus at the first attempt. I kept these patients in bed for a time, had the bowels moved daily by means of salines, had copious quantities of hot water injected into the vagina, and every other day introduced tampons of absorbent cotton saturated with boroglyceride against the fundus. At the end of a few weeks of this treatment the size of the inverted uterus was reduced, and its walls more soft. Manipulation under chloroform was then begun, and repeated efforts, each of an hour or more duration, were made at semi-weekly intervals before reduction

was finally completed. I have such faith in this treatment that I think few, if any, cases will resist it if persistently carried out. The preliminary treatment is always valuable, and should be continued during the intervals between the attempts at replacement. Manipulation which results in some indentation of the fundus walls near the uterine cornua is the most successful. Amputation or total hysterectomy need not be considered in these cases. I have never employed any other method than the one I have referred to.

Dr. GEORGE TUCKER HARRISON of New York: This subject is one of intense interest. In regard to the historical portion of the paper, for the sake of justice, I feel it my duty to say that I think Dr. Browne is in error as to the man who is entitled to the credit for having introduced the method of uniting the os externum by a silver-wire suture after partially reducing the inversion. Dr. Emmet is certainly entitled to the credit for having done this in order to hold the advantage which had been gained, and to aid Nature's efforts at further reduction. Dr. Emmet's method in these cases is to replace first what came down last.

My experience with recent inversion of puerperal origin is limited to one case, and I suppose I ought to plead guilty to a sin of commission in that instance. I delivered a woman who had a narrow pelvis, and was obliged to perform version, and I think I was to blame for the accident which followed by employing the Credé method while the uterus was relaxed. Under no circumstances should efforts at expression of the placenta be made when the uterus is relaxed. I was a little too active in my interference, and inversion took place. This happened to be one of the few cases in which there was adhesion of the placenta, a condition which we do not often meet with now-a-days. I was able, however, to peel off the placenta and reduce the uterus without difficulty.

Persistent pressure by means of a colpeurynter is one of the best methods of reducing chronic inversion of the uterus. A number of cases have been reported in which reduction has been accomplished in this way, notably one by Dr. Clifton E. Wing.

Dr. de LOTBINIÈRE HARWOOD of Montreal: My experience in inversion of the uterus is confined to two cases. The first was a chronic inversion occurring in woman with a submucous fibroid of the uterus, other fibroid nodules being found in the uterine tissue. Hysterectomy was performed, and the patient made a good recovery.

The second case was one of acute inversion, seen five days after delivery. The patient was in a very bad condition; face very pale, mucous membrane blanched, respiration rapid, the pulse 135 to 140 per

minute, and temperature 104° F. She was not only suffering from loss of blood, but from septic infection. Under the circumstances I considered it unwise to attempt reduction of the uterus, which was the focus of the infection, and, therefore, performed vaginal hysterectomy. The patient's condition did not improve, and in spite of large injections of artificial serum she died four days after the operation—nine days after delivery.

Dr. WILLIAM H. WATHEN of Louisville: Six weeks ago I operated upon a woman, 50 years of age, who had a complete inversion of the uterus. The uterus protruded through the vulva, was nearly as large as the fist, and contained a fibroid, which was attached to the fundus. The inversion had occurred many years previous. The tumor was removed, and the raw surface carefully sutured with catgut. Then, by manipulation from above through the abdominal wall, which was very thin, and from below, the uterus was gradually returned to its proper position at the end of fifteen minutes. The part which came down last was replaced first, and a great deal of force was necessary, firm pressure from above being employed to prevent injury to any of the pelvic structures. It was a tiresome piece of work, but, aside from that, no special difficulty was experienced in completely reducing the uterus. The woman made a good recovery, and left the hospital in eight or ten days.

Dr. EDWARD P. DAVIS of Philadelphia: A very potent cause of inversion of the uterus is the misapplication of Credé's method. If properly carried out, there is no indenting or dimpling of the fundus uteri, because the wound is compressed from before backward. But three cases of inversion of the uterus of varying degree have come under observation, and each was caused by the manipulations of an assistant or of a nurse.

Retention of membrane within the uterus is also a cause of inversion of the uterus by preventing its proper contraction. In some instances apparently spontaneous inversion occurs from this cause. Again, inversion is not infrequently a result of attempts to remove polypi from the uterus.

Dr. CHARLES P. NOBLE of Philadelphia: This accident has never happened in any of my cases, but I have seen three instances in which it occurred in the practice of others. One of these was the case referred to by Dr. Kelly in which he attempted to dilute from above after Thomas' method. I confess that after seeing it used with great care in this case I do not feel kindly toward the method. It seems to me that far less traumatism results when the ring is divided from below to per-

mit reposition of the uterus, and to my mind this is the method of election.

Dr. J. WESLEY BOVEÉ of Washington: I have seen only one case of inversion of the uterus. This was an acute case in which I was hastily summoned to see the patient, who had recently been delivered. The bed and floor were saturated with blood, the woman was comatose, and the uterus lay in the bed between her thighs. I replaced the uterus without difficulty. A quantity of saline solution at a temperature of 103° F. was then injected into the rectum, as I did not have with me any apparatus for insuffusion. The woman, however, did not survive. I mention the case because I was impressed with the ease with which the uterus was replaced, although, of course, the condition of the woman had much to do with this.

Dr. REUBEN PETERSON of Chicago: The question of hysterectomy in these cases is not to be considered lightly, since it is always a serious operation in that it unsexes the woman. The operation should be undertaken only when it is absolutely necessary, and after all other means for reposition of the uterus have failed. A case seen by me some years ago demonstrates the tolerance of the uterus to its malposition. I saw the patient four weeks after the accident occurred. Attempts at reduction had failed, and it was suggested that the abdomen be opened. The patient, however, refused to consent to this, and nothing was done. Two years later I saw the patient riding a bicycle, and apparently as well as other women. She then told me that she was quite well, except that she flowed more freely than usual at her menstrual periods.

Dr. BROWNE, in closing: I wish first to thank the members for the kindly way in which they have received my paper, and for the many points that have been brought out in the discussion. If the paper had been read in full many of the seeming omissions would have appeared.

In regard to Dr. Harrison's remarks, I think he will find that I have given credit to Dr. Emmet for this method of using silver-wire sutures in maintaining the partially reinverted uterus. A distinction, however, must be drawn between the use of silver wire in holding the uterus in place during the process of reduction, and its use after the the uterus has been restored in cases in which the cervix is open on account of the inversion being caused by a fibroid tumor which keeps the uterus in a flabby condition. Tait of Cincinnati and I have both used silver wire in these latter cases.

The operation which I advocate in my paper is not a modification of Küstner's operation. My operation was done ten years before Küstner did his, mine being done in 1883, and reported in the *New York Med-*

ical Journal, while he did his in 1893. My operation consists in making an incision in the posterior uterine wall, introducing the finger to see if there are any adhesions, then passing up Sims' large dilator into the ring and dilating it, closing up the incision in the uterine wall, and, finally, replacing the inverted fundus—all of which can be done in fifteen or twenty minutes. Küstner's operation is somewhat a modification of my own. He makes an incision into Douglas' cul-de-sac, however, and also in the posterior uterine wall. My operation is very simple, and does not open into the abdominal cavity.

In regard to Thomas' method, this was before me when I thought out my operation. Thomas himself has failed with his operation in a reported case. Since then Dr. Mundé has failed with the operation, and also other operators.

A distinction should be made between the treatment of acute and chronic inversion of the uterus. None of the operations mentioned are applicable to acute inversion. In most of these latter cases the uterus can be replaced without any surgical procedure—by taxis alone, inverting one horn of the uterus and then the other. This is done by veterinarians in the case of horses and cows which are both subject to inversion of the uterus. This is generally known as Noeggerath's method, although Deleurye of Paris practised it in 1786.

In regard to Dr. Kelly's remarks as to the interpretation of the biblical quotation, I do not think his translation is the correct one, for, as one reads on, the succeeding verses say that the Hebrew women have their children quicker than other women; therefore, I am inclined to believe that the interpretation I used is the more correct one.

In regard to the time at which inversion most frequently occurs, experience shows that it does not take place, as a rule, at the time of delivery, but several days subsequent to it, at about the time when the woman gets up, when there is a state of subinvolution associated with a partial indentation of the fundus or of the placental site. When inversion occurs at the time of delivery it is usually possible to replace the uterus at once.

In regard to amputation of the uterus in these cases, White of Buffalo deprecates it, and Barnes says that "amputation may be likened to the cutting of the Gordon knot. It is an illustration of John Hunter's aphorism—a confession of impotency to solve the problem of reduction. It is the last resource; one to which I am firmly convinced we need hardly ever, if ever, be driven. It cannot be said to take rank as a scientific procedure."

I also think that amputation should be the last resort. In nearly all cases the uterus can be restored to its position by the method I have described. Taxis should not be pushed as far as it has been ; instead, incision should be made early.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Stated Meeting, May 16, 1899.

The *President*, GEORGE TUCKER HARRISON, M.D., in the Chair.

Rectal Irrigation in Gynæcology.

BY CLARENCE R. HYDE, M.D.

(See page 130.)

DISCUSSION.

Dr. HORACE TRACY HANKS: I was in hopes that some of the members who were fortunate to hear the whole of this interesting and scholarly paper would open the discussion, but as I have successfully employed the method advocated by the author I am glad of the opportunity to say a few words about it. First, in regard to the tubes. Quite a variety of these are manufactured, and there is one which is quite free from the objection to which the author alludes, *viz.*, that of catching a fold of the rectal mucous membrane in the fenestra. This tube has several small fenestra. Those made of aluminium and hard rubber have openings half an inch in length, in which a fold of mucous membrane or a hæmorrhoid is very apt to get caught, causing bleeding and severe pain. In a case in private practice in which I employed rectal irrigation for its palliative effect, the patient sent back the tube, and told me her reasons for doing so. Since then I have studied the question with the results just stated. Get a tube with *no* long fenestra.

I am a firm believer in rectal irrigation in the treatment of hæmorrhoids. If employed early this method will abort them in 99 cases out of 100. It is also a comforting remedy in dysentery, and often aborts an attack in twelve hours.

I can endorse all that has been said in the paper, for many of the cases referred to were observed in my service at the Woman's Hospital. In chronic pelvis cellulitis and chronic pelvic peritonitis it will relieve these conditions more quickly than any other known treatment. But I have learned, as the author has, that it does not have a beneficial

effect in acute suppurative processes. In such conditions flushing of the rectal pouch and the resulting distention cause intense pain.

The suggestion of the author to treat young girls by this method instead of by the vaginal douche is a good one. I see many cases of congestion of the pelvic organs in young women, a condition which Dr. Emmet taught us to treat by the vaginal tampon and douches where the veins are long and torturous, which I know will be relieved by rectal irrigation.

In regard to rectal irrigation in chronic constipation, some cases may be benefited by it, but this condition is due to so many different causes that success will not follow its use in every instance, every case is best treated on its own merits. I hope, however, that we will all make it part of our future practice to employ rectal irrigation in cases of chronic pelvic inflammation, paralysis of the intestines, and acute nephritis. Within the past fortnight I have treated by this method two cases of acute nephritis. The first was one of extra-uterine gestation in which I operated. The urine had contained albumen for some time. On the day following operation the patient passed only two ounces of urine. Rectal irrigation was employed at frequent intervals, and the woman recovered.

Dr. LEROY BROWN: I wish to thank Dr. Hyde for his paper. I was much interested in rectal irrigation at the time he was on the staff at the Woman's Hospital, although I do not think occasion for using it occurred in Dr. Cleveland's service. Within the past year and a half recoveries have been so uninterrupted at the Hospital that such measures have not been necessary, and as a result the members of the present staff are not so familiar with its use.

In referring to the use of rectal irrigation in acute nephritis Dr. Hanks has touched upon an important point. I was much impressed by its usefulness in this condition a few weeks ago. I was called to see a woman at full term who was suffering from albuminuria. She was under the care of a physician who has a large general practice and a wide experience. Labor was brought on. During the succeeding twenty-four hours the patient passed only two and a half ounces of urine. Nitro-glycerine was administered and rectal irrigation employed, with the result that during the next twenty-four hours she passed between sixty and seventy ounces, and a still larger quantity during the succeeding twenty-four, and finally made a good recovery. The physician referred to told me that there was nothing in the Pharmacopœia which is as useful in his hands with this condition as rectal irrigation, and that he gets better results from it than from anything

else. He employs it for an hour at a time, and repeats it several times with an interval of four or five hours between each irrigation.

Dr. CLEMENT CLEVELAND: I have nothing to say except to express my approval of the method. It has frequently been employed in my service at the Woman's Hospital and in several cases in my private practice. It seems to be especially beneficial in cases of intestinal paralysis following laparotomy.

Dr. A. PALMER DUDLEY: I cannot add much to what has been said. I look upon rectal irrigation as another route for applying the old-fashioned and still useful hot-water application advocated by Emmet in cases of pelvic inflammation. It possesses an advantage over the latter in that almost unlimited area is reached by the irrigating fluid and the benefit is consequently increased. The heat comes in contact with a much larger venous surface, and in this way relieves congestion by stimulating the portal circulation. The point emphasized by the author as to the non-beneficial effects of rectal irrigation in acute inflammations is a trite one. In such a condition the return circulation is obstructed, therefore an increase of pain, not only from the pressure of the irrigating fluid, but from increased venous congestion due to the heat, will follow rectal irrigation. In regard to its use in constipation, I would expect it to result in failure in cases in which the condition is due to constitutional causes. In acute nephritis, however, its employment is followed by the most beneficial effect. I have employed it in a number of cases of albuminuria following operation.

Dr. JOHN ASPELL: I might have employed rectal irrigation in a case I saw recently had I known as much about it then as I do now. The patient was a woman in the thirty-third week of pregnancy, who suddenly developed suppression of urine. In addition there were symptoms of intestinal obstruction. From six o'clock in the evening until two o'clock on the following afternoon she passed absolutely no urine. At two o'clock labor was induced. After two hours a catheter was introduced, and half a pint of bloody urine was withdrawn. Hypodermics of nitro-glycerine were given, and the kidneys began to act fairly well, but the obstruction of the bowels kept up. After a high enema of hot water and turpentine a fairly good movement resulted. On the third day the patient passed per rectum about a pint and a half of tarry material which had a foetid odor. The condition would have been relieved earlier had rectal irrigation been employed.

Dr. J. DOUGAL BISSELL: I have had no experience with rectal irrigation as described by Dr. Hyde, although I have employed rectal douching, using a large quantity of water, with the patient on the left

side, so that the intestines would gravitate out of the pelvis, and have obtained good results in relieving pain. I always give an enema first in order to remove any fecal matter which may be in the rectum, and I suppose this should be done before rectal irrigation is employed, although it is not mentioned in the paper.

I have employed rectal douching with the most satisfactory results in cases of dysentery also. One case was that of a negro soldier just returned from Cuba, who was passing blood and in a most deplorable state. Salt-water rectal douching was given him, and he began to improve at once. Our soldiers in Cuba would have suffered less from dysentery had the army surgeons recognized the value of rectal irrigation.

The PRESIDENT: Two very grave forms of disease have been spoken of to-night in which rectal irrigation has been found to be of value, *viz.*, acute nephritis and intestinal paresis. This would seem to make the method of great therapeutic value. I would very much like to know if it would be of service in the nephritis which accompanies diphtheria in children. This complication presents an almost hopeless outlook. I have never seen a child so affected get well. If rectal irrigation would be of service in these cases it would prove an untold blessing.

Fibroid Tumor with Twisted Pedicle removed by Suprapubic Hysterectomy.

Dr. JOHN ASPELL: The patient from whom this specimen was removed is a single woman, 34 years of age, well developed and well nourished. The early history is negative. Her menstrual history shows the twenty-eight-day type, lasting three days and without pain. Two years ago she experienced some dysmenorrhœa, the pain being of a dull character, and lasting throughout the flow. In the course of a month this same pain appeared after walking or standing for any unusual length of time. During the past year she has had four sharp attacks of pain, irrespective of the menstrual period, on the right side, lasting from two to five days. These attacks came at intervals of from six weeks to three months, and were accompanied by rise of temperature and tympanites. The last attack was of greater severity than usual.

The patient entered the hospital in a weakened condition, with a flushed and drawn facies and the abdomen tympanitic and tender, pulse 130, and temperature 103° F. The pulse and temperature showed a tendency to rise, making operation imperative.

Upon bimanual palpation a distinct tumor about the size of an adult head could be felt on the right side and outside of the pelvis. The uterus was enlarged and uneven. A diagnosis of degenerated fibroma was made.

The indications for operation were the steady rise of temperature and pulse, with symptoms of advancing peritonitis, the rapid growth of the tumor, and pain. Upon opening the abdomen the tumor was found attached to the parietal peritonæum on the right side, but quite freely movable. There was no twisting of the pedicle to be seen, although from the appearance of the specimen there must have been during the last attack, the tumor showing a line of demarkation near the pedicle, and the great mass of the tumor pale and bloodless. Supra-vaginal hysterectomy was performed, the cervix being left and covered over with peritonæum. One tube and ovary were also removed.

An interesting feature of the case is that the patient was sent to the hospital for an operation for appendicitis. The tumor had not been recognized, and the recurrent attacks of pain were ascribed to the above cause.

DISCUSSION.

Dr. HANKS: This specimen shows the early stage of a condition which I once found upon opening a woman's abdomen. She had a fibroid tumor, the pedicle of which had become twisted and entirely destroyed. The tumor would have been entirely free in the abdominal cavity had it not been for the adhesions which connected it to the omentum through which it was being nourished. In Dr. Aspell's case the pedicle would have probably disappeared in time, as in my own case.

The PRESIDENT: It is a well-established fact that tumors may become loose from their attachments and exist free in the abdominal cavity. I reported such a case a number of years ago to the New York Obstetrical Society. The patient died, and an autopsy was made, the above condition being found. The tumor could easily have been removed had we known as much then as we do now. As it was, it contracted adhesions in the pelvis and interfered with the functions of the bladder and rectum.

Official Transactions.

J. DOUGAL BISSELL, *Secretary.*

ABSTRACTS.

This Department is in Charge of the Following Staff of Sub-Editors:

DR. T. W. CLEAVELAND, DR. G. H. MALLET, DR. A. D. CHAFFEE

GYNÆCOLOGY.

UNITED STATES.

An Experiment in Transplantation of the Entire Human Ovary.

JAMES H. GLASS (*Med. News*, April 29, 1899) reports as follows: Case No. I. was a housemaid, thirty-nine years old, who, two years previously had had a double oöphorectomy, followed promptly by the menopause, cessation of sexual instinct, anæmia, impaired nutrition, inability for exertion, and all the nervous symptoms common to the menopause. Examination showed a small uterus, flexed, and fixed posteriorly. The patient desired an operation, and accordingly (May 11, 1898) a ventrofixation was done. Case No. II., a married woman, seventeen years old, was a patient who had applied for "reconstruction" of the vagina for marked cicatrization, and contraction following sloughing after labor; the operative result in this case was very good, but the canal remained inadequate for future child-bearing, and the excision of one tube and ovary was consented to with a view to precluding pregnancy. This operation was accordingly done three days after the first operation upon Case No. I; the ovary was rapidly amputated and placed in gauze, kept moist with warm saline solution; then in Case No. I. the vagina and connective tissue were incised down to the cervix, which was stripped up to the peritonæum with the finger, when the latter was carefully raised from its attachments to a point approximating the normal position of the ovary. Oozing was controlled by hot wet compresses, and the ovary anchored by closing the canal through which it had been introduced by two tiers of fine cumol catgut, when the vagina was lightly packed with gauze. Recovery was interrupted. Six days after the transplantation the patient had a condition of sexual erethism lasting two days, during which period she had two erotic dreams; and from this time positive sexual impulse has continued. Sixteen days after operation menstruation of two-days' duration occurred; she again menstruated on December 22, 1898, the flow lasting three days, being of normal color and consistence and accompanied by a little pain; she

again menstruated in February, 1899. In other regards she has apparently entirely regained her mental and nutritive equilibrium.

The conditions following ovariectomy leave no doubt that the ovary plays some important part in metabolism, though it is impossible as yet to say which of the various theories, if any, regarding this function and the manner in which it is exercised, is correct. That the ovary or its essential principles do modify nutrition is still further demonstrated, if that be necessary, by the influence of the ovarian extracts upon the distressing symptoms following the menopause, whether natural or artificial.

Knauer has shown that in rabbits the ovaries may be transplanted from their normal to other positions; that they may heal in perfectly well on the peritonæum; that such ovaries can generate and ripen ova; and in a later paper he reports births at the normal end of a pregnancy after transplantation of the ovaries six months previously. He is now trying the transplantation of ovaries from one rabbit to another.

Of course, however feasible or desirable the operation may be in the human subject, it will be necessarily of limited application from the difficulty of establishing the necessary juxtaposition between cases. Moreover there will be the less demand for such an operation since the profession is realizing the importance of leaving as much ovarian tissue as possible in all operations, due to a recognition of its functions entirely other than marital or reproductive. Martin says that physiologically no change takes place in a woman who has even a part of one ovary left, and that in such cases none of the nervous and nutritive symptoms common in operations upon the adnexa supervene. For two years the writer has made a consistent effort to save at least a part of one ovary in all his gynæcological operations (of the most varied sort), and has been rewarded by securing in almost all cases a smoother convalescence and a much greater freedom from the profound nervous disturbances and malnutrition which in these cases were formerly ascribed to prolonged shock and exhaustion.

Cases illustrating the Uterine Reflexes.

JOHN N. UPSHUR (*Richmond Jour. of Prac.*, April, 1899) says that nervous disturbances in women are often difficult to explain, and this because the symptoms are reflex, depending upon some unrecognized uterine or ovarian trouble. A common manifestation is occipital headache. A patient recently under observation had most agonizing headache in the back of her head at each menstrual period. The flow was

always profuse, often of offensive odor. Examination revealed a relaxed vagina, a soft, tender, large uterus (the cavity being five inches deep) displaced backward. Under anæsthesia the cervix was divulsed, the uterus curetted and packed with gauze. After coming out of ether the patient had severe headache, relieved by morphia. Twenty-four hours later the packing was removed, the patient suffering intense pain in the head while it was being done. Then the headache abruptly ceased with no return except when sexual intercourse took place too close to the completion of the menstrual period. A second case, on whom a similar operation had been performed for cervical stenosis, returned to the hospital a year later with pronounced symptoms of gastro-intestinal catarrh, constant nausea, being able to take nothing but hot milk. The menstrual periods were accompanied by severe headaches and pain in the right iliac region. With this latter pain came sharp attacks of croup, relieved by copious doses of hot water. The uterus was displaced, and the right ovary enlarged and tender, no disease of left ovary detected. A laparotomy was performed. The right ovary was cystic; the left ovary was a mere shell filled with pus and bound down by strong adhesions. Both ovaries were removed, and ventrofixation of the uterus performed. Since the operation the obstinate gastro-intestinal trouble has disappeared, together with the attacks of croup.

A third case had suffered for four years from dyspepsia and bowel trouble. Last winter she was taken with severe neuralgic pains in her face and chest, which subsided, but left her so weak that she did not leave her bed. On seeing her February 13th she was found to be mentally unbalanced; worse at night; bowels loose; appetite poor; menstrual period delayed and scanty. She had complete paresis from the waist down, with inability to coordinate movements of the lower limbs or to stand. This was only when standing; in bed she could move and control her limbs. Divulsion of the cervix and curettage was performed. The endometrium was covered with vegetations. The mental condition was perfectly normal as soon as she came out from the ether, and there was no further trouble with the use of her legs.

In women a diagnosis of serious nerve lesion of central origin should never be made, or prognosis given, until all trouble with the uterus and ovaries have been thoroughly excluded.

Three Abdominal Sections on the Same Woman in Five Years.

STEWART W. PRYOR (*Virginia Med. Semi-Monthly*, April 28, 1899)

reports the case of a woman who was operated upon in 1893 for the removal of a four-and-a-half-pound pedunculated fibroid tumor. The stump was treated extra-peritonæally, and healed without interruption. A year later she was delivered of a healthy child after a normal labor. Nineteen months after that she had another normal delivery. In July, 1898, she was again in labor; on examination a tumor, almost filling the vagina was found. It was impossible to remove the tumor *per vaginam*, as there was more of the tumor above the brim of the pelvis than down in the pelvis.

Cæsarean section was decided upon, and a ten-inch incision made in the abdomen, to the right of the old scar. The tumor was very large, and attached to the lower two-thirds of the pregnant uterus. It was not deemed wise to remove the child and tumor both, as the shock would have been too great to the patient. The ovaries were ligated and removed with a hope of the tumor atrophying and saving the necessity of its removal later. A rubber tube was passed around the uterus as low down as the tumor would permit, and the fundus of the uterus was opened and a healthy living child extracted. The uterus was closed with silk sutures, and the abdomen closed without drainage. She was around the house in six weeks, but noticed an increasing distention of the abdomen, with pains in the left hip and lower part of the abdomen. In September, 1898, a third laparotomy was performed, the incision being at the left of the median line. The tumor had increased in size, but was softer. The tumor was opened, and two gallons of fluid withdrawn. The tumor sac was then removed; in separating it from the intestine it was found that two inches of the large intestine had become gangrenous. This was removed, and the wound closed. The uterus was removed after ligating the uterine arteries. An excellent recovery was made.

Hydatidiform Mole of the Uterus.

STERLING B. TAYLOR (*Columbus Med. Jour.*, May 2, 1899) says that hydatiform mole is best defined as a vesicular mass, composed of many hundred vesicles, joined by a small stem resembling a bunch of grapes. It is found in the cavity of the uterus. The first known description is in the writings of Aetius, who died in 451 A. D. It probably occurs about once in a thousand pregnancies, and is most common in multiparæ of advanced years.

Etiology.—Velpeau ascribes it to disease of the villi of the chorion. The most probable cause seems to be some dyscrasia or specific disease.

of the mother. It usually occurs prior to the completion of the third month.

A case recently seen illustrates the usual symptoms and course of this disease. Mrs. B., aged forty-seven, mother of eight children, became pregnant again last November. The pregnancy was uneventful until the last of January, when she had a sudden attack of dizziness and nausea, followed by a pink discharge resembling currant juice. This was becoming more plentiful. Fluid extract Black Haw and rest in bed were ordered. Two days later a profuse hæmorrhage occurred, weakening the patient extremely. The external os was widely dilated, and a mass presenting, consisting of small, round, bladder-like bodies. The fingers were introduced into the uterus, and the mole was removed in fragments. There was considerable hæmorrhage, which was controlled by hot-salt solutions. A drachm of ergot was given every three hours. There were three pints of the cysts; the grape-like arrangement was broken up in the removal. There was a peculiar odor, alcoholic in character.

The patient stated that she had increased in size very rapidly just before the appearance of the red discharge.

In cases where the attachment is loose ergot will prove sufficient. Where the mole has extended through and attacked the uterine wall, thinning it, and rendering radical treatment dangerous, the uterus should be packed with gauze, and ergot administered. Where the cysts require instrumental removal, a digital examination should be made of the uterine wall to ascertain if there be a thinning of this structure. Only the blunt curette should be used. Hot water and ergot will usually control the hæmorrhage, but the remedies usually applied in post-partum hæmorrhages are to be recommended.

Instrumental Rupture of the Uterus.

JOHN O. POLAK (*Medical News*, May 6, 1899) reports the case of a woman who came under his charge in January last. An abdominal section for ectopic gestation had been performed the previous summer. Examination showed an abdominal scar with evidence of previous sup-puration; a hernial impulse was felt at its lower angle. There was a purulent discharge from the uterus, which was in a normal position with the fundus fixed. A mass, which seemed to be a displaced ovary, was felt on the left. Coeliotomy was advised. The patient was etherized and the cervix dilated for curetting. A Wylie instrument was used, followed by a Goodell. The latter went through the uterus near the

right cornu. The curette was immediately withdrawn after recognizing the condition, and the uterus packed with gauze. The patient had a distinct chill lasting ten minutes, and the pulse went up to 160, and was almost imperceptible. She was placed in the Trendelenburg position, the abdomen opened, and a quart of hot-saline solution poured into the cavity, much improving her general condition. The intestines, matted together by dense adhesions, covered the uterus, and were torn twice before the uterus could be brought into view. Five heavy-braided silk ligatures were lying in the uterine rent, evidently suppurating their way through the uterine wall. Both ovaries and tubes were absent, the supposed left ovary being a localized mass of exudate. The patient's condition forbade hysterectomy. The ragged edges of the uterine tear were trimmed, a strip of iodoform gauze sewed to that in the uterus, and pulled through into the vagina. The uterus was packed from above, and the wound closed with catgut. The intestines were repaired, another quart of hot-saline solution left in the abdomen, and the abdominal wound closed, leaving two strips of gauze for drainage. Recovery was speedy. The accident was undoubtedly due to weakening of the uterine muscle in the attempt to throw off the infected silk ligatures *via* the uterus.

Vesical Calculus in the Female.

T. J. HAPPEL (*The Jour. of the Amer. Med. Ass.*, May, 1899) says that in 1872 he witnessed an operation by Dr. Emmet for the relief of cystitis. It consisted in the formation and temporary maintenance of a vesicovaginal fistulæ. In a recent book on surgery there is the statement that "some unknown surgeon" had advised the very unscientific procedure of opening the bladder through the vagina and extracting the stone in cases of vesical calculus. A short study of the operation will convince any one that so far from being "unscientific," it is a most common-sense procedure. Two cases of chronic bladder trouble, where the women had suffered for years, and one had acquired the opium habit, were treated in this way. After the vaginal opening had been made, the stone was grasped with forceps and removed, the bladder was thoroughly washed out, and the patients had no further trouble, the fistulæ closing in from eight to ten weeks. Both women had passed the climateric, and neither had any rectal nor uterine trouble.

To have dilated the urethra in these cases would undoubtedly have produced incontinence of urine, and in the sacculated condition of the lining of the bladder it would have been almost impossible to have fully

removed by washing all the detritus that would have arisen from crushing the large stone. As to the suprapubic operation it is not as good, especially in adult females, owing to the difficulty in obtaining adequate drainage. The bladder must be flushed either through the abdominal wound or the uterua, and in either case the outflow is unsatisfactory, and more or less urine is retained to irritate an already inflamed bladder. The vesico-vaginal route has all the advantages with none of the drawbacks of the other operations, and is especially desirous where chronic cystitis complicates the calculus.

Acute Diffuse Gonococcus Peritonitis.

HARVEY W. CUSHING (*Bull. of the Johns Hopkins Hosp.*, May, 1899) says that until recently it has been doubted that the gonococcus of Neisser is capable alone of inducing acute general peritonitis, it being supposed that gonorrhœal processes are checked at the abdominal ostia of the tubes. After an extensive review of the literature the writer cites the two following cases observed at the Johns Hopkins Hospital.

Case I.—Twenty-five years old; gave a history of exposure to cold during menstruation; the symptoms pointed to peritonitis, and on making an exploratory incision the serosa was found deeply injected and universally covered with a deposit of yellow fibrin. Cover-slip preparations were made during the operation, and showed a biscuit-shaped coccus, occurring in pairs, mostly intracellular, not decolorizing by Gram's method. The tubes were then examined; they were free but somewhat swollen, and a drop of pus could be squeezed from them, which showed an abundance of evident gonococci. Both tubes were removed, much of the lymph sponged away, the cavity flushed out, and eventually the patient recovered; she later gave a history of continued exposure to gonorrhœa, with leucorrhœa and burning on micturition of some month's duration. Cultures on ascitic-fluid agar from the fibrin and pus were negative; this would exclude the possibility of the presence of the ordinary organisms of peritonitis; and though positive cultural evidence of the gonococci would be desirable, this fact, coupled with the demonstration of their presence in the fibrin and in the exudate from the tubes, makes the diagnosis of gonococcus infection convincing.

Case II.—Aged 18 years; gave a history of abdominal symptoms coming on during menstruation, pointing somewhat towards appendicitis. Exploratory laparotomy revealed a peritonitis of the same sort as in Case I.; from this fact the tubes were examined, and a drop of pus

with difficulty squeezed out, in which a biscuit-shaped diplococcus, decolorizing by Gram's method, was demonstrated. Cultures were made from this material; also a strip of the fibrin was dropped by chance into a bouillon tube. After the operation the patient gave a history of exposure and infection, but attempts to demonstrate the gonococcus in the vaginal discharge were unsuccessful. A bouillon culture from the pus of the peritonæal cavity was negative but the bouillon tube into which the piece of fibrin was dropped showed a growth of typical gonococci, as did a tube of hydrocele-agar fluid which was inoculated with a piece of fibrin. Regarding the growth in ordinary bouillon, it is known that the gonococcus grows well in Marmorek's human serum bouillon, and it seems probable that the fibrin added chemical ingredients which converted the bouillon into a fluid resembling this mixture. The case was thus evidently one of gonococcus infection.

In both these cases a diffuse involvement of the peritonæal cavity occurred during menstruation, following recent exposure to infection; apparently the uterus and tubes are at such a time less able to resist invasion. The onset was sudden, with pain and vomiting, but without shock or collapse; there was no marked abdominal tenderness nor distention; the tubes were patent, and contained no accumulations. There was practically no pus nor serous exudate, the peritonitis being of a dry fibrinous type, apparently characteristic; the pseudo-membrane was not essentially adhesive. Probably these cases would have recovered without operation, but with a resulting double pyosalpinx, which would have necessitated later operation.

These cases are the first to give convincing evidence of the existence of a diffuse general inflammation of the abdominal cavity caused by the gonococcus; evidently this invasion is favored by menstruation, as it has hitherto appeared to be favored by the puerperal state. While these ascending forms of gonorrhœa usually remain localized in the pelvis, we must deny the immunity of the peritonæum to this infection, though the cases must be rare, or from their relatively benign course unrecognized.

Notes on Cancer of the Fundus Uteri.

CHARLES B. PENROSE (*Ann. of Surg.*, June, 1899) from his experience concludes that cancer of the fundus is much more frequent relatively to that of the cervix than is usually supposed. Hart and Barbour say that cancer of the fundus occurs in a proportion of two per cent. of cancer of the cervix, while the writer during four-years' expe-

rience has met with sixty-seven cases of cancer of the cervix as against eleven of the fundus. It appears to the writer also that the number of cases of cancer of the cervix has markedly decreased of late years; in a recent series of 250 patients there were but eleven cases, whereas in the 250 immediately preceding these there were twenty-seven. This is the more noteworthy, as the total number of cancers is on the increase and is due, the writer thinks, to the increasingly wide employment of trachelorrhaphy. Out of eleven cases of cancer of the fundus, seven were judged operable, and were submitted to abdominal hysterectomy, the first about five and the last about two years ago; all have been recently heard from, and present no indications of recurrence. In the writer's experience these results are much more favorable than those obtained in operations for cancer of the cervix; hysterectomies in the latter, with the exception of two cases, in which there was no recurrence at the end of two and a half and three years respectively, having been most unsatisfactory in their results.

OBSTETRICS.

UNITED STATES.

Diet during Pregnancy as a Preventive of Dystocia and for the Determination of Sex.

EDWARD PREBLE (*Obstetrics*, May, 1899) says that recently two systems of diet have been perfected with the design of controlling, respectively, the sex of the child and its size at term. Schenk's discovery of the system was due to the observation of the fact that normal glycosuria is more common in women than in men, and that diabetic women, as a rule, bear female children. His experience has practically proved that women who do not normally excrete sugar, and those in whom sugar may be made to disappear from the urine by adhering to a highly albuminous and fatty diet during the periods of ovulation, impregnation, and first three months of gestation (up to the time of the differentiation of sex) are quite certain to bear male children. The drawback to the practical value of this discovery is the expense entailed by the repeated quantitative examination, as especially delicate tests (phenylhydrazin) are required to demonstrate the minute quantities of sugar often found in women just before or after menstrua-

tion. Ten too, a year is required to demonstrate the value of the diet in a given case; still, where male issue is especially desired among the well-to-do classes, these considerations are of little account.

Prochownick of Hamburg was in search of a substitute procedure for premature delivery in cases of narrow pelves. The various starvation diets, venesections, and other depleting measures of previous centuries are not to be compared with Prochownick's diet, which denies to the foetus nothing which it actually needs, but keeps off an excess of weight of liquids and fat habitually present, but by no means indispensable.

Prochownick's original article appeared in the *Centralblatt für Gyn.*, No. 33, 1889. His first application of his theory had been in 1887 on a patient whom he was to confine for the fifth time. The preceding pregnancies had ended respectively in perforation, version, artificial premature delivery (twice). None of the children lived. At the beginning of the seventh month of the fifth pregnancy he placed the patient upon the following diet:

Morning: Small cup of coffee and six drachms zweiback.

Noon: Any kind of meat, eggs, and fish with very little sauce. Some green vegetable with fat added. Salad and cheese.

Evening: As above, with addition of $1\frac{1}{2}$ ounces bread and as much butter as desired.

To be *entirely* avoided: Water, soups, potatoes, cereals, sugar, beer.

Fluids per day limited to 12 ounces red or Moselle wine.

The confinement occurred at full term, a breech presentation, yet but little help was required from the physician. The child, female, weighed five pounds, was lean, bones firm, bones of skull hard yet freely movable. The child did splendidly on the bottle, still lives, is healthy, free from rickets, and has recovered from several of the diseases of children. Two other cases, with similar histories, ended happily.

An article by Horn in the *Monats. f. Geb. u. Gyn.*, VIII., gives the status of Prochownick's diet up to the present year. Of the 47 cases not a mother or child was lost. Horn also claims that labor pains are better under this diet, as the formation of interstitial fat in the myometrium is prevented. No influence on sex has been noted.

There is no interference between these two systems, as Schenk's deals solely with the time before conception and the early months of gestation, and Prochownick's is confined to the latter months of pregnancy.

The claim of Prochownick to originality is disputed by some who refer to a small pamphlet published in 1841 by a London chemist, named

Rowbotham. He, impelled by two dystocic labors of his wife, placed her upon a diet which sought to exclude the mineral ingredients which go to make up the bones. The diet consisted largely of fruits containing vegetable acids. His ideas are largely followed in the "popular" medical book called "Tokology." But there is only a superficial resemblance between the two systems. In Rowbotham's plan little animal food was taken, while Prochownick's diet is notably a nitrogenous one. And the cutting down of fluids, a cardinal point with Prochownick is entirely ignored by Rowbotham.

Difficulties in carrying out the diet are expense, necessity of strong will on the part of the patient, and the choice of the right time. The abstinence from fluids is perhaps the hardest of all.

Puerperal Eclampsia.

M. G. PARKER (*Practical Med.*, May, 1899) wishes to impress upon the profession the great value of venesection in cases of eclampsia. In a practice of fifty years many such cases have come under his notice and his practice is to bleed freely at the onset of the attack, withdrawing from two to three pints of blood. Ten drops of veratrum viride should then be given, and one grain of calomel every hour until four or five doses have been given. Then elaterium may be given to assist the action of the calomel. Four-drop doses of veratrum viride should be injected every two hours until convulsions cease, and labor begins.

PÆDIATRICS.

UNITED STATES.

Saarlet Fever treated with Antistreptococcic Serum: Recovery.

E. M. LANDIS (*Jour. of the Amer. Med. Assoc.*, April 8, 1899) reports the case of a child of two years, who, when first seen, had been ill for four days with scarlatina. The temperature was 105°, there was a characteristic exudate upon the pharynx, tonsils, and soft palate, and moderate enlargement of the cervical glands; the subsequent course was severe, and the ears became involved, with perforation of both drums; there was a profuse purulent discharge from both auditory

canals and the nose. Treatment consisted of baths, milk, and whiskey, ammonium carbonate and phenacetin, with cleansing of the purulent surfaces. The temperature ranged high, and thirteen days later reached 106.5°, when the child became drowsy and refused to take food. The use of antistreptococcic serum was decided upon, and ten c. c. injected at 9:30 in the morning. At 3:30 in the afternoon the temperature had fallen to 100°, the discharge was much lessened, somnolence had disappeared, and the child was bright and took food. The patient passed a comfortable night, but the next morning the temperature had again risen to 104° and the discharge was free. The treatment was repeated with the same result as before, and again on the following morning, after which the temperature did not go above 100°. Convalescence was rapid, though an ear-discharge of thin consistence continues. No albuminuria could be discovered at any time, nor were the sites of the injections as tender as after antitoxin. The author says that though no bacteriological examination was made, there was no room for doubting the diagnosis.

The Limitations of Conservative Surgery on the Female Genital Organs.

GEORGE BEN JOHNSTON (*The Medical News*, May 13, 1899) says that conservatism in pelvic surgery contemplates repair of diseased but redeemable structures, with abatement or removal of morbid conditions, restoration of function, relief of suffering, and saving of life. It must accomplish all that radicalism can, and more, in restoring the integrity of parts without sacrifice; failing in this, or when extended beyond safe bounds, conservatism may become rank radicalism. In the selection of his method of treatment the surgeon must be governed by:

1. *The Age of the Patient.*—To a woman during the child-bearing period the preservation of the uterus and at least one tube and ovary (or a part of the latter) is of vital importance, and measures leading to that end should be used, even if they carry with them some risk of failure.

2. *The Nature of the Malady.*—No conservatism is admissible in cases of malignant neoplasms, tuberculosis, or suppurative diseases due to malignant pyogenic organisms.

3. *The Extent of the Lesion, and the Existence of Complications.*

4. *The Patient's Physical Condition.*—As conservative operations usually involve more extensive manipulations than do radical procedures, the latter must sometimes be adopted, where the patient would

be unable to stand prolonged anæsthesia and the shock of a long operation.

5. *The Probable Necessity of a Second Grave Operation.*—Under such circumstances a radical operation is more truly conservative.

As to the relative importance of the organs, the ovaries stand first. It is useless to preserve the tubes alone and even the uterus is practically of no importance unless some portion of an ovary can be saved. It is only within late years that the importance of the ovarian secretion has been fully recognized; and beyond the mere physical questions are the moral and mental changes that sometimes follow removal of the ovaries. Taking up the morbid conditions of the organs in detail, the writer fixes the limit of conservatism in certain cases. In the list of ovarian troubles that demand removal of the organ are placed:

1. Large painful hæmatoma, producing reflex nervous symptoms, and occupying the bulk of an entire ovary.

2. Graafian cysts, when numerous and apparently involving the entire ovary.

3. Abscesses, when large and centrally located.

4. Dermoids, as these tumors are apt to destroy the organ, and produce local peritonitis, with painful and dangerous adhesions.

The uterine tubes should be amputated in:

1. Extra-uterine pregnancy, if the tube is much enlarged and altered.

2. Kinks and strictures that are numerous, decided, and accompanied by dense adhesions.

3. Hydrosalpinx of either the follicular or flowing varieties; and in simple hydrosalpinx if the tube is greatly distended, its walls thinned and adherent.

4. Pyosalpinx, where the infection is other than gonococcal, and in this if the abscess cavity is large.

In fibroids of the uterus the question of a conservative operation must be carefully weighed. Where there are only a few subserous tumors they should be removed, but if they are deep-seated, or embrace the bulk of the uterus, or if very large, the advantage is on the side of removal of the uterus. The doubtful cases are those in which the tumors are interstitial and small. When few and well-defined myomectomy may be undertaken with reasonable hope of success. Where the number is large the numerous and deep incisions required for their extirpation render the operation tedious, dangerous, and uncertain. Overlooking a single nodule may destroy the permanent effect

of the operation. In every case at all doubtful, *except in young women*, hysterectomy is preferable to incomplete myomectomy.

The presence of pathologic conditions in two or more organs, usually places the case beyond conservatism.

In the application of conservatism the soundest judgment, the ripest experience and consummate skill must be present.

The Treatment of Whooping-cough.

EDWARD F. WILLOUGHBY (*Therapist*, May 15, 1899) protests against the popular idea that whooping-cough cases should be kept in the open air; nothing more tends to prolong the disease and invite its complications. The rational treatment consists in the avoidance of every source of irritation; the child should be kept in a well-ventilated room at an even temperature, kept from excitement and noisy play, and taught as much as possible to restrain the paroxysms. The diet should be light, and it is well to withhold the regular meals and to give a little food shortly after each attack; the bowels should be kept free. Of drugs the writer relies mostly upon chloral hydrate; it should be given in such doses and at such intervals that the child will be disposed to sleep, say, half as many hours again as usual, and be inclined to doze from time to time during the day. Of late the writer has found the action of the chloral aided by combining it with antipyrin. If this management be strictly carried out, the termination of the cough at the end of three or four weeks is often astonishingly abrupt and complete; and the writer has frequently found that children kept in doors for a few days after this sudden cessation of the cough could then go out in the coldest weather, with no returns of the symptoms, whereas such exposure, if suffered when the cough was still present, would have prolonged it indefinitely.

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PRELIMINARY OBSERVATIONS ON THE RELATION OF
SOME INTRAPELVIC CONDITIONS TO BLOOD STATES
IN WOMEN.*

BY CHARLES A. L. REED, A.M., M.D., CINCINNATI, O.

In accepting your kind invitation to read a paper in your presence this evening—an honor for which I sincerely thank you—I fear that I may disappoint your expectations by failing to discuss a strictly surgical theme. My apology, if one be required, for departing from the usual custom in this particular, must be found in my long entertained conviction that, after the great epoch of surgical development covered by the last quarter of a century, it may be well to pause occasionally and consider some of those topics which yet bind our special department of practice to the great field of scientific medicine. And just here I am impelled to observe that as gynæcologists we may be open to the criticism of interpreting that word as having a too strictly surgical significance, and as not embracing within its meaning a consideration of those medicinal, hygienic, and moral agencies which make for the weal or woe of womankind. But little frankness is required on our part, or on the part of many of us, at least, to bring us to the confessional with the admission that in many cases we are prone to attribute a preponderating influence to constitutional states rather than to local pelvic conditions, as causative factors in a given general state of invalidism; in certain other instances we are liable to look upon the local condition as the *fons et origo* of the whole difficulty; while in altogether too many of our cases we look upon our mission as ended when mere surgical convalescence has been realized. It is highly important for us to take seriously into consideration all the phases of illness which brought the unfortunate

* Read before the Chicago Gynæcological Society, April 21, 1899.

sufferer under our care. It was this broadened conception of my duty to my patients which a few years ago prompted me to take up in a more or less systematic way the study of various correlated constitutional states—more particularly the various blood states as manifested in connection with pathological conditions found within the pelvis. I have followed out this plan to an important extent in my private practice and at both the Women's Surgical Hospital in connection with Dr. Bettman, who was then associated with me, and during the last two years in my service at the Cincinnati Hospital. At the latter institution it has been a matter of routine to have the blood investigated by repeated observation in all cases both before and after operation. In this way I have succeeded in collecting a number of suggestive facts; and I say "suggestive" because I realize that much more extended observations are required to justify final conclusions. That which I present in this paper, therefore, I beg you to accept as preliminary observations which are offered at this time with the hope of stimulating similar investigations by other observers rather than with the object of furnishing a basis for conviction and practice.

In making a study of the deviations from the normal standard of the blood, it is, of course, important to bear in mind that certain variations are not inconsistent with health. Thus there may be a variation per cubic millimetre of a million red and three thousand white corpuscles, without appreciable influence upon the health of the patient while a dietetic leucocytosis is always to be held in mind. Hæmoglobin may be 20 per cent. under Fleischel's standard for 100—and there be no serious result. There may be a vacillation in the proportions of solids and fluids and a variation in the specific gravity, and the blood still be considered normal. Yet when these variations are pronounced and persistent they are followed by more or less serious consequences. When, therefore, the count shows much deviation from five million red and ten thousand white corpuscles, to the cubic millimetre, and shows such deviation persistently the fact is accepted as abnormal. When the hæmoglobin is much under a hundred for a similarly long time, a similar significance is to be attached to the fact.

You will pardon me, I trust, if in presenting to you a brief summarization of my observations, I prefer to do so in narrative style rather than by detailed case reports. I find that my cases which have occurred in sufficient number to be entitled to consideration, are susceptible of classification into those of (a) undeveloped genitalia, (b) uterine displacements, (c) endometritis, (d) infections of the uterine appendages, (e) myomata and fibromyomata of the uterus, (f) ovarian cystomata,

(g) chronic oöphoritis with cystic degeneration of the ovaries, and (h) surgical convalescence. The blood states observed have been those of leucocytosis, oligæmia, oliochiomæmia, and oligocythæmia, embracing several forms of both symptomatic and idiopathic anæmias.

Blood States in Infantile Genitalia.—It has fallen to my lot to have had under my observation during the last two years two very interesting cases of infantile genitalia. One was that of a young lady of nineteen, well nourished, but who complained of pains in her extremities and of lassitude. As she had never menstruated, that fact was accepted as the cause of her difficulty, and she was brought to me for examination. I found a rudimentary uterus less than an inch in length and could discover no evidence of the existence of ovaries. On careful interrogation I could not elicit that she had ever experienced even a menstrual impulse. She had no pelvic pain or tenderness. Her blood state was: red corpuscles 5,000,000, white corpuscles 9,000, hæmoglobin 95 per cent. On the other hand I have a case under observation upon which I operated for imperforate hymen two years ago. She was then eighteen; I removed about four ounces of retained menstrual fluid. Since then, as before, she has had excruciating pain, with but a very slight flow at each menstrual epoch. Sometimes she has had the pain, but no flow. The pain, which is both uterine and ovarian, comes on about four days before the expected flow and lasts a full week. On examination I found that her uterus is but about an inch and a quarter in depth and that the ovaries are impalpable. This girl was anæmic when she came to me two years ago, but I did not make a blood study in her case at that time. A few months ago, however, I had the count made and found it to be: red, 3,200,000; white, 10,000; hæmoglobin 60 per cent.

These two cases are of extreme interest because both have rudimentary, almost infantile internal organs of generation; but in the first case they are so small that they manifest no effort at functional activity, while in the second they are large enough to attempt the function, but with no other than an agonizing result. In the first case there is no disturbing impulse sent out over the sympathetic to interfere with the functions of other organs, while in the second morbid impulses are telegraphed to every nook and cranny of the system. The fact that chlorosis is a disease of girlhood and of puberty, probably finds its most frequent and demonstrable explanation in the fact that in the evolution of maidenhood, the menstrual impulse has overtaken ovaries not yet sufficiently developed to discharge their functional obligations. The dysmenorrhœa that is a most constant symptom with chlorotic girls and almost always referred to the ovaries, and that usually subsides when

time has elapsed for the ovaries to develop, is but another confirmation of the theory that ovarian states, through the avenue of the sympathetic, exercise a controlling influence over the hæmogenic organs. This view is not new; Trousseau spoke of the relation between uterine states and chlorosis, while Kiwisch and Rokitsansky recognized the influence of immature genitalia in the causation of the same disease. Stengel records that in these cases the ovaries are usually small, infantile, and deficient in the Graffian follicles.

Blood States in Uterine Displacements.—I have been profoundly impressed with the influence of certain forms of uterine displacement upon the functions of hæmatogenesis or hæmatolysis, or both, as manifested by blood-counts in patients who had other pathological conditions to which the state of the circulatory fluid could be attributed. The most pronounced changes have been noted in cases of retro-displacement with fixation, the fundus resting in a position to constantly impinge upon some part of the sacral plexus. In such cases I have found pronounced oliginæmia and in two instances marked hypohæmaglobinæmia. Nearly all of these cases present more or less marked phenomena of neurasthenia, which may be taken as so many expressions of a toxæmia. More or less blood disturbance is observed in cases of descensus uteri. These cases are generally less painful than the retro-displacements to which I have alluded, a fact which, no doubt, explains the less pronounced effect upon the blood states. I am at a loss to explain the relation of cause and effect in these cases, unless we look upon prolapsus of long standing and severe degree but as an index of a more or less general splanchnoptosis. That there does exist a decensus of other organs in many of these cases is a fact of which I have been long convinced. It is easy for us, therefore, to adopt the theory of Meinert of Dresden, who claims to have demonstrated a gastropptosis in sixty consecutive cases of chlorosis, twenty-five per cent. of which had movable kidney—one case having a double nephroptosis. The significant fact in Meinert's observations is, however, that he speaks of gastropptosis as being always secondary to a general enteroptosis. It is this displacement of the viscera that he holds responsible for the hæmatolysis. To whatever extent this theory may or may not prove tenable, and to whatever extent descensus uteri may be taken as an expression of a more general splanchnoptosis, the fact remains that there is an appreciable improvement without other treatment, in the blood states of those who have submitted to corrective treatment of the local condition.

Blood States in Chronic Endometritis.—It would seem that the ordinary forms of endometritis—those in which the discharge is essentially

catarrhal and free from septic contamination—exert very little influence upon the blood state. On the other hand, cases in which the discharge is yellowish and in which the pus-formers are demonstrable, there occurs a slight increase in the number of the leucocytes. My observations in this class of cases are limited for the reason that in the majority of instances, in which infection of the cavity of the uterus occurs, there is also involvement of the Fallopian tubes, the blood state of which conditions I have considered under the head of pyosalpinx. There is a class of cases of endometritis, however, in which the blood changes are very marked, and rather uniform. I allude to those of long standing with menorrhagia and metrorrhagia. In these cases there often occurs a veritable oligæmia; the normal ratio of the globular elements being preserved, but with a hypohæmoglobinæmia, being very pronounced in a few instances. The post-operative observation of these cases exhibited a rapid improvement in the blood state after the local and causative condition had been corrected.

Blood States in Pyosalpinx.—Forty-four cases have been recorded in my practice in which the blood states have been studied in connection with pyosalpinx—in some of which, however, there was coincident infection of the ovaries. In a few of these cases the diagnosis of the disease rested almost wholly upon the evidence furnished by the blood-count; but in every such instance it was confirmed by the revelations of the operation. In these cases the blood state was not essentially different from that occurring in connection with suppuration in other localities. The feature always present was a leucocytosis varying from 13,000 to 38,000. I have never failed to find a leucocytosis in some degree in every case of purulent infection of the uterine appendages, and in certain instances the number of leucocytes seemed to exist in inverse ratio to the local mischief. This, however, was true only so long as the suppurative process was strictly limited to the lumen of the tube. Once the infection had extended to the peritonæal cavity or to the cellular tissue the leucocytosis became more pronounced. In two cases in which the bacterial life in the pus had become nearly extinct, the blood had resumed almost its normal character. My observations on the relation between the different infections and the consequent leucocytoses are too meager to have other than a suggestive value. All the cases were those of mixed infection. I have yet to find a pyosalpinx in which both streptococci and staphylococci are not present—while contrary to the general opinion the gonococcus is not demonstrable in more than twenty-six per cent. of the cases subjected to bacteriological study. Those cases in which the gonococci were discovered, however, presented a general high

average of leucocytosis—although the element of acuteness and chronicity in the inflammatory process seemed to bear an important relation to the blood state—those cases in which the process was acute and intense and attended with an abundance of highly cellular exudate, presenting the maximum of leucocytes—38,000 to the cubic millimeter.

The subsequent course of these cases, so far as their blood state is concerned, has been uniformly satisfactory—at least, in all instances in which it has been possible to follow them. As a rule observation cases when they are dismissed from the ward. A brief summarization of my first three cases may, however, serve to illustrate the usual experience: (1) A case in which both Fallopian tubes were infected, staphylococci and gonococci were demonstrated; leucocytosis at time of operation, 14,000; three weeks after operation, 8,000. (2) A case of left pyosalpinx, mixed infection, no gonococci; leucocytosis at time of operation, 15,000; two weeks after operation, 10,000. (3) A case of double pyosalpinx, mixed infection, no gonococci; leucocytosis at time of operation, 16,000; four weeks after operation, 9,000.

Blood States in Ovarian Cystomata.—In the majority of true ovarian cystomata, small and uncomplicated as we usually meet them to-day, there occurs no appreciable disturbance of the blood. In one case of a twisted pedicle, giving rise to an active pericystic peritonitis, there occurred a leucocytosis of 14,000. In a case of a very large cyst that I operated upon a few days ago—the first “old-fashioned ovariectomy” that I have done for several years—in which there were some areas of peritonitis that were quite recent, a leucocytosis of 13,000 was found.

Blood States in Carcinoma Uteri.—Observations made in eight cases of carcinoma uteri, while not extensive enough for general conclusions, are suggestive in their similarity. In six cases in which the disease was yet limited to the cervix, leucocytosis was not pronounced—11, 14, 10, 11, 13, and 10 thousand—while in two advanced cases (one with metastatic development in the retro-peritonæal glands) the counts showed 24 and 26 thousand. While this is true I have, *by way of contrast*, under my observation at the present time, a case of advanced carcinoma uteri, with retro-peritonæal metastasis, and abundant ascites in which there is no leucocytosis—the count showing but 8,000. In those cases in which hæmorrhage had become a pronounced feature, the leucocytosis was more aggravated—but this was observable only for a time, after which the cellular elements of the blood would regain their prehæmorrhagic balance. The records, except in two instances, fail to mention the presence of mononuclear cells, and one mention is made of the presence of myelocytes. Hydræmia with diminished

arterial tension and a disappearing pulse at the elevated wrist is often observable.

Blood States in Uterine Myomata and Myo-fibromata.—It does not appear that myomatous growths of the subserous variety exercise an appreciable effect upon the blood. Those of the interstitial and sub-mucous varieties and polypoid growths that occasion hæmorrhage, modify the blood largely through the drain they exercise upon it. In many of these cases in which the loss of blood has been great, either by sudden and violent hæmorrhages, or by more or less constant dribbling, there exists a demonstrable oligæmia, often associated with a hydræmic state, induced by the excessive absorption of fluids from the tissue to replace the loss. In all of these hæmorrhagic cases there is a marked leucocytosis.

Blood States in Chronic Oöphoritis with Cystic Degeneration of the Ovaries.—I trust I may be pardoned for asking especial attention to that class of cases in which the small but degenerate ovaries are the source of great pain, but in which there exists no infection whatever. As a rule these most unfortunate women are not treated with the consideration they deserve—a fact which I believe to be largely attributable to the failure to investigate with sufficient care their actual local and constitutional state.

In one case which had been subjected to prolonged treatment by iron and arsenic, the various constructors, diastatic and otherwise, change of climate, travel, baths, massage, electricity, and indeed everything that these cases first and last extort from the resources of alleged conservatism, the following blood state was found on admission: Blood was pale and continued to run from a needle puncture for several hours; red corpuscles, 3,400,000; white corpuscles, 10,000; hæmoglobin, 65 per cent.; a few microcytes were observed. In another case equal paleness and fluidity of the blood was observed, while corpuscle count showed red, 4,000,000; white, 9,000; hæmoglobin, 60 per cent. The blood state in each of these cases verged closely to that of chlorosis, while many of the usual clinical phenomena of that disease were present. Both of these cases were operated upon by oöphorectomy. The ovaries in both instances were mere clusters of cysts, the stroma of the organ having practically disappeared. The surgical convalescence was immediate. Within two months after operation the condition of the first patient was as follows: the bowels had regulated themselves spontaneously, digestion was resumed, the patient was sleeping well and had gained in weight, while her blood showed 4,200,000 red corpuscles; 9000+ white corpuscles, and 85 per cent. of hæmoglobin. The second

case unfortunately escaped observation at the end of the third week, when she was dismissed as a surgical case. At that time the blood count showed the same condition of red corpuscles; a slight increase in the white corpuscles, while the hæmoglobin, determined by Fleischel's apparatus, had increased from 60 per cent. to 80 per cent. In neither of these cases had iron or other so-called chalybeates been given. In a considerable number of other cases in private practice, under circumstances which would not admit of investigation of the blood, the clinical symptoms have indicated conditions such as I have just enumerated. I cannot resist the temptation, however, to give in brief outline the salient features of the following case, which is yet under my observation: The patient is a young woman of twenty-seven years of age. She began menstruating at about fourteen in an entirely normal way. Five years ago she had typhoid fever, with pronounced intestinal complications. Her recovery was, however, quite satisfactory, with the exception that from the date of that illness she was annoyed with menstrual pain in the ovarian regions. This gradually increased in severity until she was conscious of more or less constant tenderness in the region of those organs. After a brief period of comparatively good health, she began to decline. She became constipated and soon developed severe headaches; these presently assumed the form of migraine. Her heart became irregular, and when I saw her first, less than two months ago, her pulse was ninety-six and her arterial tension was high. She had insomnia and her appetite was capricious in the extreme. She gave a history of constant medical attention, of sanatoria, of seaside resorts, of metropolitan hotels, and distinguished neurologists; she told of a curettement and of a course in electricity; she had been douched, tamponed, bathed, and tonicized—indeed, it seemed that no resource had been overlooked, that no expedient had been left untried. A physical examination revealed a uterus entirely normal except that it was retroverted and that there was a slight laceration due to the previous forcible dilatation. When a little pressure was made in either fornix of the vagina, pain was complained of, and if counter-pressure were made by bi-manual manipulation in this locality the pain was greatly augmented. The patient stated that a step, or the vibration of a carriage or railway train were equally intolerable, because of the pain caused in the ovarian region. She was generally constipated, but occasionally had diarrhœa, which abounded in mucus. Her urine vacillated from 1005 to 1038, and from neutral to highly acid, and showed traces of uric acid. Her blood count showed 3,500,000 red and 10,000 white corpuscles, with a pronounced oligochro-

æmia. A diagnosis of cystic degeneration of the ovaries was made and operation was advised. This was done six weeks ago, at Christ's Hospital, with the assistance of Drs. Wood and Berlin. There were never more pronounced examples of this disease than in the structures that I removed and that once had been ovaries. The surgical convalescence was speedily realized, and there has been a progressive amelioration of all her constitutional conditions. The specific gravity of her urine is more constant and of a lower general average. Her red blood-corpuscles have increased a million to the cubic millimeter, she has fewer leucocytes, and her hæmoglobin is not far from 95 per cent. Her bowels have regulated themselves; she is eating well and sleeping well. Her attacks of migraine are much lighter and farther apart, while there is a complete absence of the old nagging pain in the pelvis. It is the last two particulars that have made me recipient of a gratitude that she never fails to express.

The condition generally spoken of as "cystic ovaries" and which in fact is the most painful affliction that can befall a woman, has a vastly more than local significance. These are the cases that complain of constant ovarian pain with premenstrual exacerbations, that are constipated nervous, sleepless, pale, and headachy. They are the cases that shrink and cry out from pain from the slightest pressure upon the ovaries. They are the cases which, when operated upon reveal translucent ovaries which are but little else than aggregations of small cysts between which may be discerned few remaining striæ of ovarian stroma. These are the cases in which the premenstrual blood pressure induces a still more agonizing pressure upon the terminal nerve filaments, over which the morbid impulses are telegraphed throughout the length and the breadth of the sympathetic system.

An irritation of the sympathetic nerves, persistently applied cannot but disturb the functional activity of the spleen, which, as we all know, is one of the organs chiefly interested in the hæmoglinc process. Kruger recognizes this fact and urges that chlorosis and even pernicious anæmia may be caused in this manner. This conclusion is directly in line with my own observation. But without reference to the part that may or may not be played respectively by the spleen, lymphatics, glands, and bone-marrow in blood production, the fact remains that the integrity of the blood depends in the first instance upon the condition of primary nutrition, *i. e.*, food, digestion, and assimilation; and, in the next instance, upon the proper deposition of the products of metabolism—*i. e.*, elimination. If the former is interfered with the supply will not equal the waste; if the latter is intercepted the blood becomes laden with tox-

ines, the influence of which upon its constitutional elements is strikingly destructive. There is not a recognized form of anæmia, not even in progressive pernicious anæmia, nor in chlorosis, pseudoleucæmia or Hodgkin's disease, but that present instances in which some disorders of the gastro-intestinal tract has followed initial mischief in the ovaries, tubes, or womb. In other words there are none of these diseases but that, in many instances, trace their development to some interference with primary nutrition. There exists outside of the virulent infections, no more pronounced or no more persistent interference with primary nutrition than that arising from diminished peristalsis due to perturbation of the controlling sympathetic. Such a condition is at once favorable to absorption, but inimical to elimination. As a consequence, there is a hyperabsorption from the gastro-intestinal tract. The various toxins elaborated in the *prima viæ* are taken into the circulation where they exercise a globulicidal influence. Add to those thus taken up the products of metabolism which are retained in the circulation for want of open-door emunctories, and we have a double tide of destructive agencies, coöperating to produce anæmias, which, while truly symptomatic, frequently become such overshadowing features as to be classed as idiopathic. I am sustained in this view by Sir Andrew Clark, who was wont to speak of chlorosis as "fæcal anæmia," due to constipation, which, in turn, had its origin, in many cases, in intra-pelvic states. More recently Professor Augusto Murri of Bologne, has described chlorosis as a vasomotor neurosis of genital origin. I am convinced that in probably the majority of all instances this view is the correct one.

The Blood States in Surgical Convalescence.—The changes in the hæmic states following operations are very various. Thus in cases in which the constituents of the blood have been disturbed by pathological states, which have been overcome by operation, there ensues a tendency to the normal standard. This tendency is interrupted in practically all cases by a more or less transient leucocytosis, depending upon the reparative process in the field of operation. There is to be recognized a class of cases, however, in which the blood states, depending in large part upon the phenomena which I have just noted, are matters of much pathological and clinical interest. I allude to those cases in which convalescence is interrupted, after the first week or ten days, by the development of neurasthenic symptoms, often associated with intense migraine. In many of these cases there has been no previous manifestation of these phenomena. If observation has been kept up on the blood of these patients they will be noted to have developed a pronounced leucocytosis, possibly of 20,000 or more, during immediate surgical con-

valescence, but daily counts now show a recession of the condition. Each day fewer leucocytes appear in the field. It is the metamorphosis of the white corpuscles and the consequent increase of the uric-acid group, as shown by the urine, that is responsible for those toxæmic symptoms that we to-day embrace under the title of neurasthenia. The secondary degeneration of this group results in the elaboration of xanthin and paraxanthin and their congeries, which, as toxic agencies seem to exercise an elective affinity for the sensory centers. Add to this the auto-intoxication derived from hyperabsorption from the sluggish intestines and that which is locked in the system by the closed emunctories and we have a state of affairs which reinvigorates deteriorative changes in the blood, and re-establishes the post-operative anæmias that sometimes mar our otherwise satisfactory results. I am impelled at this point to interpolate the irrelevant observation that, in view of the foregoing considerations, we are in the habit of dismissing our patients too soon after operation, and that we should hold them until we are assured of the restoration of their constitutional health.

In conclusion I wish to emphasize anew the statement that I made in my opening paragraph—namely—that the observations upon which this paper is based, although numbering several hundred, are not sufficient to justify final conclusions. They are offered in this desultory and, I fear, all too fragmentary way to serve as suggestions to other observers to take up the work and carry it to a point of practical fruition.

REMARKS UPON THE DIAGNOSIS OF PUERPERAL SEPTICÆMIA.*

BY W. REYNOLDS WILSON, M.D., PHILADELPHIA.

Puerperal infection should be easily recognized on account of the direct connection between the occurrence of the symptoms and the event of labor. The liability to contact-infection offered by the surroundings of the patient and incidental to the management of labor is the etiological factor in the disease, so that when once the origin is established the diagnosis is clear. The manifestations of septic infection due to local lesions, such as endometritis, metritis, parametritis, salpingitis, peritonitis, phlegmasia declare themselves clearly. The same can be said also of the milder forms of septic intoxication which sometimes follow labor, dependent upon minor disturbances, the evidences of which subside as quickly as they appear. These two classes of infection present therefore little difficulty in diagnosis. It is of the more virulent form of infection—the true septicæmia—that the following remarks are intended to treat. This form of infection is usually so overwhelming in its form of attack that the local manifestations are often not detected, or so rapid may be the absorption of the septic material that the local evidences of infection may be absent. This form of infection has been sometimes confused with *sapræmia* under the supposition that the poison develops in the maternal tissues irrespective of the introduction within her body of pyogenic organisms from without. It is, however, doubtful whether a true *sapræmia* exists, that is, a condition of the blood in which the products of infection exist only as they affect the chemic organization of the blood without revealing the presence of pyogenic elements. It is more likely that many cases described as *sapræmia* are instances of true septicæmia, and we are, therefore, not in a position to pronounce a given case *sapræmic* until either the lochia have been proved to be free from bacteria, or the bacteriological examination of the blood and tissues fail to reveal pyogenic organisms. If the term *sapræmia* is used at all it should apply to the milder forms of infection due to putrefactive changes in the genital tract. There appears to be no doubt that the alkaloidal products of such changes—such as cadaverin and putrescin, for instances—are rapidly absorbable by the blood; at the same time it is rare for this process of putrefaction to be

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unaccompanied by evidences of true bacterial infection. Therefore, if we choose to accept the existence of sapræmia we need not include its manifestations with the symptoms of septicæmia properly so-called—for the reason that the very element of putrefactive changes places this form of infection in a different category—although the two conditions may be associated.

Our remarks, therefore, come to be limited to that form of infection represented by pronounced symptoms due to the products of bacterial absorption without local manifestations.

The symptoms of septicæmia are classic: rigor and sudden rise in temperature, suppression of the lochia and arrest of secretion, in the first stage. Delirium, fever, exhaustion, in the second. Continued and increasing pyrexia and delirium, prostration, emaciation, in the third; the disease being terminated rapidly by death. The manifestation of organic disease, other than that due to the infection proper, is usually absent. The course of this form of infection is rapidly fatal, the patients, in some instances dying on the second or third day from the shock due to the overwhelming absorption of the poison, in other instances lingering, with gradually increasing exhaustion for two weeks. Death occurs as the result of the toxæmia. For this reason the pathological anatomy reveals no distinct lesions except the degenerative changes in the parenchymatous organs due to continued hyperpyrexia. The original seat of infection usually presents no evidence of local change, so rapid has the process of absorption taken place. To quote Williams, "The infectious elements pass through the port of entry with such rapidity that they do not there give rise to local lesions." The absorption of the infecting material occurs probably by means of the lymphatics, but the penetration into the tissues of the micro-organisms which are primarily responsible for the infection is so rapid and so general that the foci of colonization such as are seen for instance in pyæmia cannot be detected. The inflammation of the lymphatic tract leading from the uterus through the broad ligament to the peritonæum and the general lymphatic circulation, secondary to the propagation of bacteria from the uterus in the course of their systemic invasion, giving rise to the so-called metro-lymphangitis, is not noted. Peritonitis is also absent.

The condition being one of a fever-producing toxæmia the symptomatology may be readily confused with that of other serious febrile conditions. This is especially the case where the patient comes under the care of the consultant after delivery, or in which the history of the onset of the symptoms is not clear.

The most important of such conditions are the following: Puerperal insanity—which may be classed among the febrile affections incidental to the puerperium.

Typhoid fever—pneumonia—the symptoms of both of which are due to special infection, bacterial in origin.

Malarial fever—which represents a true toxæmia of parasitic origin.

As to the first, certain parallel symptoms occur in puerperal insanity and septicæmia. Among these may be mentioned fever. The course of the pyrexia is somewhat different however. The fever of septicæmia is continuous with occasional exacerbations, with or without the accompaniment of rigor. Puerperal insanity, on the other hand, is usually attended with a moderate febrile movement, which comes to resemble more and more the fever of septicæmia as the stage of exhaustion progresses. It is, however, in the development of delirium that septicæmia assumes a confusing similarity to puerperal mania. The similarity of the two conditions under these circumstances is shown in the occurrence of sudden excitement with marked hallucinations. The delirium in septicæmia and the mania in puerperal insanity may also both be characterized by an anxious vacant expression, and, between the maniacal outbreaks, by intervals of torpor. Relaxation of the sphincters with involuntary passage of urine and fæces is apt to be present in both conditions. In extreme cases the refusal of the patient to take food is also common. In confusing cases with great similarity as to symptoms the course of the disease, as it advances, is really the only sure basis of differential diagnosis. In puerperal mania the secondary stage of melancholia, followed often by gradual recovery, defines the course of the disease, while in septicæmia the gradually increasing rise in temperature and the exhaustion which follows the stage of delirium terminate the case.

The analogy between septicæmia and certain cases of typhoid fever is more striking. Both diseases present the common symptom of a septic infectious fever. They are both likely also to be characterized by abdominal symptoms. Each disease also is marked by certain symptoms of nervous exhaustion, chief of which is delirium. In both conditions the spleen is enlarged, although in septicæmia this enlargement is not so constantly present as in typhoid. Tympany and diarrhœa may also be present in both conditions. As to the latter the septic diarrhœa, which is often associated with the delirium and abdominal tenderness in septicæmia, may make the differential diagnosis between this latter condition and typhoid extremely confusing.

The points which tend to remove doubt are: first, the history of the

disease—the slowly developing prodromal stage, and second, the presence of rose-colored spots. These are the only dependable factors in diagnosis, outside of the cultural test of Widal. The importance of the latter means of corroborating the clinical evidences of typhoid in any given case cannot be overestimated.

The appearance of the tongue in typhoid and the facial expression are also characteristic. The latter element in diagnosis is not to be overlooked. No one who has seen the anxious excited expression in the delirium of septicæmia can mistake it for the dull fascies of fully developed typhoid. The history of epistaxis, and later in the disease the presence of intestinal hæmorrhage and the diurnal variation in temperature characteristic of typhoid preclude any doubt in diagnosis.

In many cases of septicæmia at the height of the disease together with the usual symptoms, the breathing is apt to be superficial and jerky, the result in all probability of the depressing effect of the special toxin on the respiratory center. This symptom is accompanied by lividity of the face and blueness of the fingers from defective oxygenation. In phthisical subjects or in cases in which a bronchial catarrh may have been present before delivery the cough accompanying these symptoms may suggest pneumonia. Indeed a thoroughly physical examination of the chest is essential in order to exclude the possibility of pneumonia, inasmuch as the symptoms of pulmonary involvement may not declare themselves at once. It has not been an uncommon experience to find post-mortem the evidences of a well-defined secondary broncho-pneumonia which has complicated puerperal infection, and the symptoms of which have been overshadowed by those of the septicæmia.

Pneumonia during the puerperium is not an uncommon condition, and yet its manifestations are not those distinctly of the bronchial involvement, as the symptoms in the beginning of the disease are rather due to the severe infection than to the catarrhal process. In differentiating symptoms common to pneumonia and septicæmia the character of the sputum and the early localization of pain in pneumonia are important points in diagnosis.

Lastly, malarial infection, which appears to claim conspicuously the diagnostic attention of many practitioners, may in reality be set down as offering the least confusing symptomatology as regards septicæmia. The reason for this is that modern bacteriology has furnished us with an unerring means of diagnosis, in the examination of the blood of malarial subjects—a means which should be sought out, as a measure of exclusion, upon the first suggestion of malarial poisoning, and before the use

of which it is well to refuse to entertain the possibility of malaria at the expense of septicæmia.

The analogy of the two diseases may be considered from the following symptomatology of malarial infection during the puerperium:

Rigor, fever, depression, arrest of secretion, and suppression of the lochia, together with subinvolution. The similarity, however, ceases when we are able to establish, first, the history of the case; second, the periodicity of the seizures; third, the enlargement of the spleen; fourth, the malarial cachexia; fifth, the presence of the plasmodium in the blood.

Our knowledge of the bacteriology of septic infection brings us to the point of accepting, as the only certain means of diagnosis, the proof, which the presence or absence in any given case of the infecting micro-organisms, may offer. If by cultural methods the uterine content or the blood reveal the presence of bacteria the case is proven. The common opinion of recent investigators, conspicuously Döderlein, Thomen, Krönig, Whittridge Williams, is that under normal conditions the cavity of the puerperal uterus is free from pyogenic bacteria. If, therefore, under proper methods of obtaining the lochial secretion for examination the cultures give negative results we are safe in excluding infection from an intra-uterine source as the cause of the symptoms. If, in addition to this, no other local source of infection can be discovered, such as vaginal ulcers, and no results from blood cultures can be obtained, we may exclude septicæmia.

It may be well to quote from Williams the description of his method of obtaining the specimens of the uterine contents for examination:

"Cultures may be taken from the interior of the uterus with comparatively little difficulty by means of the lochial tube, which was first introduced by Döderlein, and which consists of a glass tube 20 to 25 centimeters in length and 3 to 4 m.m. in diameter, with a slight bend at one end so as to conform to the anteflexed condition of the uterus. It is sterilized either by dry heat or steam, and is then ready for introduction. In practice the most convenient method for sterilizing the tube and enabling us to carry it with us in sterile condition is to place it in a long test-tube of thick glass, which contains at its lower extremity a small amount of cotton, and whose upper end is filled with a cotton plug, just as one closes the ordinary culture tubes which are employed in bacteriology. The lochial tube is then sterilized within the test-tube, and may thus be carried from place to place without fear of contamination.

When we wish to make cultures from the uterus, our hands and the

external genitalia should be thoroughly disinfected, the patient placed in Sims's position, and a sterilized Sims's or Simon's speculum introduced so as to retract the posterior vaginal wall, then the cervix caught with a sterilized Volsellum forceps and brought down to the vulva. The vaginal portion of the cervix is then carefully cleansed with a bit of sterilized cotton, and the sterile lochial tube is removed from its tube and introduced into the uterus as high up as it will go, care being taken to avoid touching the external genitals in the operation. To the end of the tube which protrudes from the vulva a syringe, which draws well, is attached by means of a rubber tube. Suction is made, whereby a certain amount of the uterine contents is drawn up into the tube. The tube is then removed and its ends sealed with sealing wax, when it can be carried to the laboratory without fear of contamination. On reaching the laboratory it is broken in its middle portion and cultures taken from its contents, which we know represent the uncontaminated lochia from the upper part of the uterus."

Unfortunately the practical benefits resulting from the brilliant work in this field have been negated by the somewhat disappointed outcome of the study of the action of anti-streptococcus serum, as first proposed by Marmerek. Had the results of this form of treatment been otherwise our means of combatting septicæmia when once developed would have been as conclusive as our prophylaxis now is through our knowledge of the ætiology of the disease.

CORNUAL PREGNANCY.*

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The Fallopian tubes and the uterus are derived as we all know from the Müllerian ducts which appear quite early in embryonic life in the ventral edges of the Wolffian bodies. While the upper parts of the Müllerian ducts which permanently remain separate and distinct, develop the tubes, the lower half of these ducts by their blending develop the uterus. Deviations from the normal process of blending may and will give rise to a variety of anomalies and malformations of the uterus, of which a few may be mentioned. The two parts may be developed equally, but the junction may not be complete, leading to the condition of uterus bicornis unicollis, either horn of which may become pregnant, and be delivered of a normal child at full time. In another class of cases one horn is well developed, and the other only partially, being attached to the first one by means of a pedicle which may or may not be provided with a pervious canal leading into the cervical canal.

Turner says: "In cases of uterus bicornis unicollis where both horns are symmetrically developed, their cavities communicate freely with the canal of the cervix as may be seen in Figure iii, of my first series. But when one horn has been retarded in its development, or if it has become more or less atrophied, it then assumes an accessory or rudimental character. As a consequence of this, the size of the cavity at its cervical end may become considerably diminished, and even in some cases may, I believe, no longer exist. The specimens which have been recorded illustrate the gradation from a well-marked open canal to a perfectly closed condition."

Kussmaul thinks "it is improbable that such a canal had not existed before the conception, and it is equally improbable that the connecting band would have been originally solid. It is more probable that it had become closed up in consequence of the pregnancy, the closure occurring partly through pressure of the widened blood-vessels, partly through a decidua-like growth of the mucous membrane of the connecting canal as was observed in the case of Rokitansky." Turner is not inclined to accept this argument and continues: "From a consideration then of these various circumstances, and from the fact that in these cases which have

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been recorded, a regular gradation has been traced from a distinctly recognizable canal in the pedicle to that condition in which none could be detected, I am disposed to think the pedicle must have been solid before impregnation was effected."

This is probably the view which is now pretty generally accepted as cases have been reported in which neither a sound could be passed through the pedicle, nor could careful microscopical examination detect any signs of a preexisting canal. Walthard's case is one in point where he specifically states that "during operation and section the finest sound could find no communication of the sac with the uterus, nor could microscopical section."

Pregnancy may occur in the undeveloped horn, and Kussmaul in 1859 was able to collect twelve cases of this sort; to these Säger in 1883 added fifteen cases, and in 1888 Himmelfarb found seven more cases, making in all 34 cases at that date. In 26 of these the foetus died before the middle of pregnancy. In 24 of the cases rupture of the horn occurred and caused maternal death. In an article by Cullen and Wilkins in *Johns Hopkins Hospital Report* for 1897, the statistics given show that in the 39 cases of cornual pregnancy collected by them, not a single case which ruptured failed to die very promptly. This is the usual history of cases of cornual pregnancy in a very large percentage of all the cases of this variety. They go on to about the fourth or fifth month when rupture occurs and death. This of course is somewhat later than in tubal pregnancy. The case observed by Cullen and Wilkins, which formed the basis of their report, died about two after the beginning of the symptoms of rupture, and before surgical help could be procured. So far as my own searches in the literature go they confirm this statement. With the exception of Massen-Slavjansky's case I have been able to find no cases reported which were operated after rupture took place, and this case died on the fourth day of general peritonitis. The cases, however, which were operated on before rupture occurred, have given most excellent results. Of the twenty-six cases which we have found, twenty-two of them have made good recoveries, or close on to eighty-five per cent. In view of these facts it behooves us to make as early a diagnosis as possible, and remove the offending horn. If we may fairly judge by Cullen and Wilkins' case, it would be almost impossible to prepare a patient for operation before a fatal result occurred. The hæmorrhage from such a rupture would be much greater than from the average rupture of a tubal pregnancy, because of the larger vessels probably involved, and the fact that in a

typical case the horn is free and movable and the bleeding is favored in consequence.

The anatomical conditions that are found in these cases vary from a case like Riedinger's where the pregnancy took place in a uterus, which showed no external signs of being bicornuate, to a slightly grooved condition of the fundus, or a widely separated horn which was connected with the rest of the uterus and the cervix by a fleshy pedicle which might or might not have a canal leading into the cavity of the cervix. If a canal had existed in the pedicle and become obliterated prior to the occurrence of pregnancy, how was the menstrual flow disposed of, and why has there not been formed a hæmatometra from the retained blood and as a result the impossibility of pregnancy taking place? It is not known positively whether the rudimental horn menstruates or not. The case of Hoepfl is of some interest in connection with this point. In this patient a fistula was formed by uniting the edges of the sac to the abdominal incision and a surface of the sac 10 cm. by 5 cm. was left exposed; although the fistula remained open for some ten months, and the patient menstruated during this period, there was never any discharge of menstrual blood through the fistula.

If the impervious condition of the pedicle had existed at the time of conception, of course this could have taken place only by one of two methods. Either the spermatozoa passed through the developed horn and its corresponding tube, and thence across the pelvic cavity to fertilize an ovum on the side of the undeveloped horn. Or else the spermatozoa fertilized an ovum on the developed side which in some manner found its way across the pelvis to the rudimental horn. The corpus luteum verum was found in such a large proportion of cases reported to be on the side opposite the pregnant horn, that it seems that we must accept this as a possible mode of impregnation. The experiments of Leopold seem to prove conclusively that, in dogs at least, it is possible for the ovum to pass across the pelvic cavity and enter the tube on the opposite side. By removing the ovary on one side, and tying off the tube on the opposite side, pregnancy still took place in a number of animals on which he experimented. In at least eight cases of those we have the histories of the corpus luteum verum was on the opposite from the pregnant horn.

On account of the well-known mobility of the spermatozoa, it is not difficult to understand how they might pass across the pelvic cavity from the well developed to the rudimental side; but how an ovum can cross over from the ovary of one side to the tube on the opposite side is not so easily comprehended. It is true we do not know how

close together the two ovaries were lying in the pouch of Douglas prior to the occurrence of conception.

It has been stated by some writers that in these cases pregnancy occurred oftener on one side than on the other, the right side being usually the one thought to be the more common. We have found in the cases reported fully enough to show which side is involved that the figures of the two sides are almost equal, there being twelve on the right, eleven on the left, and three in which the side is not given. The largest number of cases have occurred in the first pregnancy, being eleven out of twenty-six. Five cases occurred in the second pregnancy, two in the third, two in the fourth, and one case in the fifth. The other cases were not specified. The average age of the first pregnancies was 23 years, of which the oldest was 29 years, and the youngest 18 years.

Among the 26 cases, as before stated, there have been 22 recoveries, and 4 deaths. Of the four deaths we have the cases of Litzmann-Werth, Massen-Slavjänsky, Remfry, and Owen. Werth's case was already septic when operated, and died two days later of peritonitis. This case had been diagnosed as retention of full-term putrid foetus in utero. Massen-Slavjänsky's case died on the fourth day of general peritonitis. This was a case of rupture of the pregnant horn at about the fourth month, and it is the only one we have found which was operated after rupture took place. Remfry's case died on the ninth day of shock. In this case the patient did well, and the stitches were removed on the seventh day, and apparently primary union had taken place. On the eighth day, after a severe fit of coughing, the wound was discovered to have gapped, and the intestines had protruded under the dressings. Died the next day of shock. Owen's case was unique; the abdomen was opened, and a cornual pregnancy was found, the pedicle of which was open into the cervix. The canal of the pedicle, however, was bent downward into the pelvis, and then turned upward to reach the cervix. After pulling up the pregnant horn an assistant could introduce his finger through the cervix and into the canal of the pedicle to feel the presenting part. The operator contented himself with simply raising up the pregnant horn and then closing the abdominal incision. Two days later the six-and-one-half-months' foetus was delivered through the natural passages, and four days later the mother died.

Of the cases which recovered, Sängers case gave birth to two living children some time later, Gummert's patient had a child fourteen months later with normal confinement, Waltherd's patient had normal labor eleven months after operation, and my own patient is probably pregnant

since about November 5, 1898. Serejnikoff's patient was delivered by the operation of a live child which lived some six hours. This is probably the only case recorded where a living child was delivered from a rudimentary horn. Gummert's case was a simultaneous intra-uterine and cornual pregnancy combined, and was diagnosed as a threatened abortion at the third or fourth month, and a dermoid cyst of the left ovary.

The cases which I have tried to get together were those which have been operated upon, and of course the cases which have ruptured and resulted fatally to the mother have not been included. That a large percentage of these result in rupture and death is shown in the thirty-four cases mentioned above as having been collected by Kussmaul, Säger, and Himmelfarb. In the operated cases we can divide them into two classes, the first and larger class being the cases which went to full term or later, and the second or smaller class being those which were diagnosed and operated previous to the seventh month of pregnancy. Of these two classes, in the twenty-six cases we have collected, there were fourteen belonging to the first, and only six to the second class. In the other six cases the detailed reports were not sufficiently complete to enable us to decide as to the exact period of pregnancy.

As regards symptomatology, in the first class, as a rule menstruation stopped and symptoms of pregnancy supervened. To the stoppage of menstruation there was but a single exception and that in the case of Mangiagalli, and in this the flow continued regular, but scanty. In all the other cases menstruation stopped entirely for a period varying from four or five months to ten or eleven months. Macdonald's case did not menstruate for eleven months, and Rosthorn's for thirteen months. As pregnancy proceeded there was the usual gradual enlargement of the abdomen, nausea, vomiting, dental neuralgia, usually more than ordinary pains in one or the other side of the lower abdomen which did not always attract attention, pigmentation of linea alba, enlargement and fullness of the breasts with presence of colostrum in a fair proportion of cases, and frequently the typical changes in the nipples and areolæ. Patients in some cases felt life, and the examiner could distinctly auscultate the foetal heart or outline the foetal parts by abdominal palpation. As time went on and date of expected labor arrived, a large proportion of these patients were taken with pains lasting for a variable period and eventually passing away. In the nine cases reported by Macdonald, Gallé, Salin, Walthard, Hoepfl, Riedinger, Schramm, Wiener, and Serejnikoff it is specifically stated that pains occurred at the end of pregnancy. After the disappearance of the pains for a variable length

of time the patients would again begin to complain of pains, and these, frequently with the development of septic symptoms, led them to seek surgical advice. More careful examination now being made disclosed the facts that the mass was lying at one side of the pelvis, and that the true uterine cavity was empty. Bimanual examination showed in most cases that the uterine body was lying decidedly laterovered to the side of the pelvis opposite the pregnant horn, passage of a sound to the fundus showed the uterine cavity to be empty and frequently the lateral mass could be demonstrated to connect with the uterine body by means of a fleshy pedicle at about the level of the internal os. The tumor was usually oval, and occupied a diagonal axis in the abdomen. According to Hoepfl, Küstner says: "The rule (that almost always beside the sac a distinct corpus uteri is easily to be felt extending upwards from the point of junction of this with the uterus or cervix) is not without exception; if the bicornuate condition is less developed, or if the point of junction of the rudimentary horn lies very high, then it is not possible to separate the non-gravid horn distinctly from the gravid horn."

In spite of what appeared in many of the cases to be clear histories, all sorts of mistakes in diagnosis were made. Thus in Angus Macdonald's case where with what appears in reading to be clear history of pregnancy a diagnosis of fibroid was made, and the actual character of the tumor was discovered only after getting into the abdomen. Most of the cases were mistaken for pedicled myomas or ovarian cysts and very few cases were correctly diagnosed. Sängér looks upon the intermittent contraction and relaxation of the sac as being characteristic of cornual pregnancy, and so it might be if found, but it is very apt to be absent. Landau speaks of it as being of little moment, and Walthard especially states that in his case neither hardening from contraction nor softening could be demonstrated. This symptom is apt to be absent in a large proportion of cases on account of thinning out of the musculature as the horn is distended. Küstner considers the presence of decidua in the uterine cavity as a distinguishing sign of tubal pregnancy, and Bland Sutton in his book on the "Surgical Diseases of the Ovaries and Fallopian Tubes," published about 1891 says: "In tubal pregnancy, a decidual membrane forms, not in the tube, but in the uterus; in bicornuate uteri the decidua is formed in the impregnated cornu." These statements are not strictly true because observers have seen decidua in the pregnant tube, and also in the non-gravid horn in cases of cornual pregnancy. The latter was observed by Werth in his case.

In the class of cases where the condition is discovered during the

earlier months, the diagnosis is much more difficult on account of the absence before the fifth month of any of the positive signs of pregnancy. Leopold in the discussion of Sanger's case says that in the first six months diagnosis is very difficult without an exploratory laparotomy. Another writer says that the diagnosis of this condition is only a fortunate accident. Of course the extreme rarity of this condition, and our almost complete unfamiliarity with it make the diagnosis exceedingly obscure. Serejnikoff quoting from Schrenk says that among cases of extra-uterine pregnancy, the cornual pregnancies compose only 3.6 per cent. In a typical case as in my own it seems as if a little more knowledge would enable us to make a diagnosis, or at any rate a very strongly probable diagnosis. Given a mass in the lower abdominal region following the cessation of menstruation and all the ordinary symptoms of beginning pregnancy, and corresponding in size to a pregnancy of date indicated by the last menstrual discharge, and in which we find the uterine cavity empty and the body pressed to one side of the pelvis, and the mass connected with the uterus by a fleshy pedicle at the level of the internal os, our suspicions as to the true character of the condition should be strongly awakened. At any rate our suspicions as to an existing pregnancy should be aroused, and the physical signs will enable us to make at least a probable diagnosis.

We should expect in the first place an amenorrhea, and this has been the case in the few patients (only six) which have been reported with the exception of Landau's where menstruation took place every six to eight weeks, as before conception occurred. Then we expect to find nausea, vomiting, fullness and enlargement of the breasts, changes in the nipples and areole, and possibly pigmentation of the linea alba. Bimanual examination will disclose the uterus lateroverted, sounding will show the uterine cavity to be empty, and a mass of variable size will be discovered connected by a pedicle with the uterus usually about the level of the internal os. Sometimes or perhaps as a rule the uterine cavity may be increased in depth from $1\frac{1}{2}$ to 3 cm., and the cervix may be softened and somewhat patulous. Discoloration of the vagina and cervix may or may not be present. A sign which was very striking in our case was the extreme mobility of the mass, much more so than could be the case except in this condition or that of an ovarian cyst or fibroid with a very long pedicle. This exceptional mobility was noticed in several of the cases reported, as in that of Macdonald's who speaks of the marked lateral mobility of the mass. Landau also speaks of the free mobility of the tumor in his case the first time he examined it. Given a probable extra-uterine pregnancy we may safely diagnose it from a

tubal gestation, as it is probably very unusual to find a pedicled tubal pregnancy, Wiener also looks upon the mode of connection with the uterus as a very important point in the diagnosis, saying "Through the mode of connection with the uterus perhaps horn pregnancy may be differentiated from interstitial pregnancy, as in the former the pregnant horn is united to the other horn by a longer or a shorted pedicle almost never at the upper portion but as a rule in the region of the os internum, while the latter is joined broadly to the uterus. Besides this as the interstitial pregnancy increases in size it draws the whole uterus up with it as is the case in interparietal growths located on the fundus, while in horn pregnancy this is not the case, or if so, to a small extent."

Landau whose case was unique as the foetus died very early, and changes took place as the result of such death, speaks of these changes as follows: "The previously smooth, tense, elastic tumor was decidedly smaller, harder, more uneven, and less movable. It lay still deeper in the pelvis than before and depressions were easily recognizable on the surface. To the left and behind the tumor was to be felt a body like an ovary lying close to it. The relation of the tumor to the uterus and the position of the latter was unchanged." He says further: "As to the diagnosis this could not be made with certainty, although the woman was examined on three different occasions. When the first-time pregnancy (intra-uterine) was diagnosed it was impossible with the most careful examination to differentiate the uterus, bent sharply to the right, from the pregnant horn lying close to it and filled with fluid contents. At the examination fourteen days later intra-uterine pregnancy must be excluded as one could now very distinctly and separately feel the small uterus in the right pelvic half, and not a single sign spoke in favor of the tense elastic tumor being an extra-uterine pregnancy. On the contrary its extensive mobility and the palpation of the pedicle made one think only of a pedicled ovarian cyst or myoma." He thinks, however, that perhaps the changes, such as took place in the consistency of this mass may be of value in diagnosing parallel cases in the future. The tumor, at first tensely elastic later became solid. "When we ask what kind of growths may undergo such changes as are necessary to produce the conditions, the only answer we can give is that they are such encapsulated tumors as contain fluid and blood, the latter clotting and the fluid part being absorbed. Further, what conditions are there that offer such combinations, blood in preformed space? Only extra-uterine pregnancy and hæmatocele. Of growths which vary in size or consistency there are several, as hydrosalpinx or hydronephrosis; perhaps also changes are observed in many myomata, also the consistency of myomata

may vary according to whether they are examined during menstruation or in the interval. Ovarian cysts with twisted pedicle change in size, only here there is never any change in consistency even with severe bleeding as only the blood and not the fluid coagulates. That a previously cystic swelling becomes smaller and hard can only be true of encapsulated blood tumors. This can only happen where the wall does not tear, but remains encysted. For cases in statu nascendi in the true sense of the word this sign has no value. Here it will depend on whether one can recognize the fact of an ectopic pregnancy at all, and if this can be done can one recognize a horn pregnancy? Think that with simple vagina and single cervix it will very seldom be possible." It might be well to add that in none of the twenty-six cases collected has any note been made of duplicity of either vagina or cervix, though of course if either of these conditions were found our suspicions would be much more readily excited.

Walthard in speaking of the diagnosis in his case says: "Course and symptoms speaking of pregnancy, first the sudden stoppage of menstruation a short time after marriage, then reflex disturbances in the region of the trigeminus and vagus, dental neuralgia, nausea, and vomiting. All this in connection with a relatively rapid development of a tumor growing up from the true pelvis made it little probable that it was the ordinary ovarian or uterine growths. Objectively the diagnosis was supported by the signs of pregnancy; pigmentation of the face, areola of the nipples and linea alba; the prominence of Montgomery's tubercles and presence of colostrum, and finally the bluish discoloration and relaxation of the vagina and portio. From the demonstration of a well-developed uterus 1.5 cm. longer than normal, and this in a woman who had never previously borne children or aborted, the idea of ectopic gestation was given. The impossibility to push the sound toward the tumor permitted pregnancy in a normally developed horn of a uterus bicornis to be eliminated; against this was opposed the unavailing attempts at expulsion of the pregnant sac. From the presence of a broad pedicle connecting the tumor with the empty uterus on interstitial pregnancy could be excluded. The diagnosis of a tubal pregnancy was rendered all the less probable from the fact that with a living foetus rupture of the sac takes place in the first four months in 90 per cent. of the cases observed, while the thriving of the foetus until the later months, in spite of the mass of exact observation is becoming increasingly seldom."

In regard to treatment there is only one method to adopt, and that is to remove the undeveloped pregnant horn as soon as a diagnosis can be

made. It should be removed *in toto* wherever practicable. If too many adhesions interfere with the complete removal of the sac, it should be trimmed off as much as possible and the edges united with the edges of the abdominal incision.

The history of my own case is as follows: Mrs. A. S., 23 years of age, Swede, presented herself at my clinic June 6, 1898. She had been married one year and a half. No children. Said to have miscarried some time in January, 1898, but had no physician, and this may be doubtful. Always regular previous to marriage, and up to within six weeks of the supposed miscarriage. When she presented herself at the clinic she had not menstruated for four months. She complained of an abdominal mass in the right iliac region, which had first been noticed about two weeks previously. Both she and her husband stated that when first discovered it was about the size of a goose-egg, but had increased very rapidly since then so that when I first saw her it was the size of an average full-time foetal head. The mass was painful and sensitive to pressure, she complained of some morning sickness, and the areolæ of the nipples were somewhat darker than normal. The temperature was 100° F., under the tongue. Physical examination through the abdominal wall showed an exceedingly movable mass which could be pushed freely into almost any part of the abdominal cavity, though when left alone it always gravitated back into the right iliac region. The mass was ovoid in shape and in quiescent position its long axis was diagonal to the long axis of the body. It was difficult to tell whether its contents were fluid or solid. Patient had no urinary symptoms and bowels were perfectly regular.

Bimanual palpation showed the uterus crowded decidedly to the left, somewhat larger than normal, and also slight degree of softening of the cervix. Color of vagina and cervix not noticeably altered. By having assistant pull the mass up toward the ribs a pedicle could be felt connecting with the uterus on the right side well below the fundus.

The diagnosis of cornual pregnancy was discussed, but was excluded on account of the history of rapid increase in size, and the extreme mobility which at that time I considered too extensive to accompany this condition. A diagnosis, or possible diagnosis of ovarian cyst with twisted pedicle was made on account of this same increase in size, tenderness, pain, and temperature. In making this diagnosis too much stress was laid upon the statement of the patient as to the rapidity of increase in the size of the tumor which could not have been growing any faster than a normal pregnancy. The diagnosis should have been based more on the menstrual history and the signs obtained by bi-

manual examination. A correct diagnosis could be made almost positively in a parallel case.

The patient was operated upon a few days later. On opening the abdomen the mass presented at incision was apparently a cyst, and as there were enlarged blood-vessels running across the surface, the diagnosis appeared to be confirmed. A trocar was plunged into the tumor and



some ounces of fluid were withdrawn. The flow of fluid soon ceased, and then the true condition of things was recognized in attempting to deliver the sac. The sac at this point was very thin and friable, and tore readily in the efforts to remove it. Placental tissue and foetus were delivered before the sac was turned out. The sac was amputated well down to the internal os. The pedicle was rather broad and was tied off in about three sections, when the stump was buried

under the peritonæal layer. The left cornu was enlarged to about the size of a six-weeks' pregnancy and during the next few days shreds of membrane were passed per vaginam. These were probably decidual membrane but were so completely degenerated at the time they were discovered as to make a microscopical examination impossible. The patient's recovery was absolutely uneventful.

Dr. M. Herzog has kindly prepared the following description of the specimen, and also given the report of his pathological examination. The specimen removed, after having been hardened in alcohol and formaline, presents the following points: The embryo, a female, is about 16 cm. long, and appears normal in every respect. The gestation sac in which it had been contained has walls which vary in thickness between over 2 cm. and to about 1 mm. Where the placenta has been implanted there is a general thinning out of the wall of the gestation sac. The thinnest place corresponds to the middle of the placenta. Where the walls are thick, they contain firm muscular tissue, where they are thin, they have become completely membranous, and seem to contain no muscular elements at all. It appears that the pregnant horn in growing was rotated upwards and inwards. This must probably have been due to the particular location of the spot where the ovum became implanted, and also to the unequal development of the muscular coat which is so markedly deficient opposite the central area of the placenta. In consequence of the rotation and displacement of the developing pregnant horn, tube, and ovary have become dislocated and they present themselves behind the gestation sac, and near its upper and inner portion.

The part of the Fallopian tube removed is 3-4 cm. in length. The fimbriated extremity is rather small, but otherwise normal. It appears that its plicæ and folds have been more or less closed by mutual approximation, but the closure has not been complete since a small probe can enter the tubal canal. It cannot be exactly ascertained how the tube entered the uterine or cornual cavity since the internal part of the isthmus tubæ had not been removed, but it seems that the tubal canal had entered that part of the cornual gestation sac which had become the pedicle. This pedicle is about 2-3 cm. in diameter and according to the statement of the operator was originally about 2 cms. long. The tube shows a well-developed mesosalpinx, from which projects a small hydatic of Morgagne. The ovary appears normal but somewhat compressed and flattened. It contains a large corpus luteum which, however, is quite pale.

A microscopic examination of the specimen shows that the formation of the placenta has progressed normally and that its elements are not

different from those of a normal uterine placenta of the same age, except as to one peculiar feature to be mentioned below. Chorion and villi show the usual tissue elements, *viz.*: a mesodermal vascular layer, lined by the cell layer of Langhaus, which is itself surrounded by the syncytium. Syncytial buds are quite abundant. The decidua shows the characteristic large decidual cells and a moderate layer of canalized

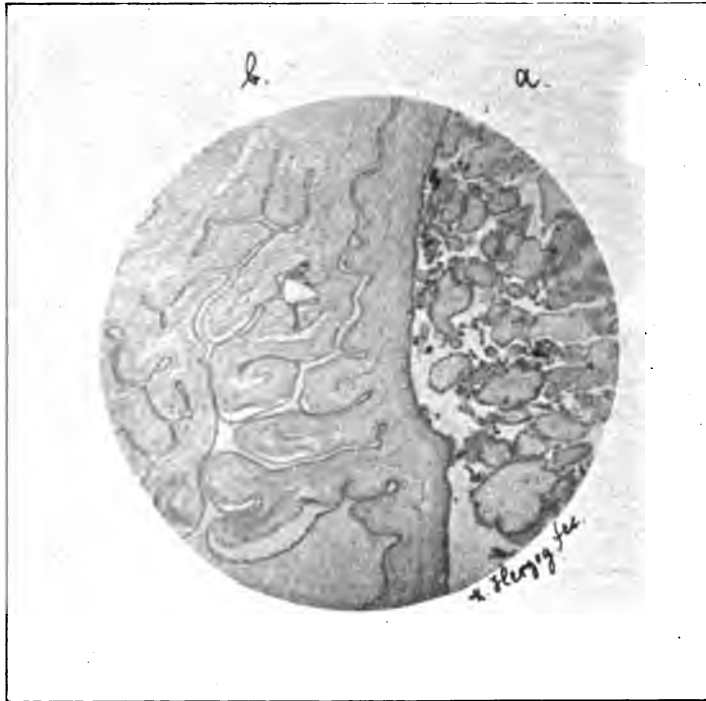


Fig. 2.

Pregnancy in a uterine horn. (X. 50). a. Intervillous space with villi, etc. b. Amniotic cavity into which are projecting amniotic villi.

fibrin. The attachment of the villi to the decidua is normal. Degenerative changes in the decidua are found in a moderate degree only. The involuntary muscle cells of the muscularis uteri are very much increased in size and are apparently in the same stage of development as we find them in a normal uterine pregnancy of the same age. The peritonæal covering of the muscularis uteri does not present any pathologic changes. At those places, however, where the gestation fibers

are very scanty and in a state of hyaline degeneration. This is probably due to the malnutrition in consequence of stretching and lack of proper blood supply. On this very thin area (less than 1 mm.) a rupture could have easily occurred. A conspicuous feature is the absence of any great amount of fibrous connective tissue between the muscle fibers and bundles. In this respect this specimen of a horn pregnancy, the wall of which in its thickest place has a thickness of $2\frac{1}{2}$ cm., differs materially from tubal pregnancies in which there is already found quite early an abundant amount of fibrous connective tissue distributed between the muscular elements of the enlarging tube wall.

Evidently the rudimentary horn becoming pregnant acts very much like an impregnated uterus, and not like an impregnated tube. The absence of any great amount of fibrous connective tissue between the muscle fibers in the gestation sac of a horn pregnancy, in a doubtful case, where after rupture a differentiation from a tubal pregnancy may be quite difficult, seems to be a feature of diagnostic value.

The presence of the thin areas almost devoid of muscular elements is to be explained in the following manner. It appears from the observations of Sanger, Broers, and Dittrich that the number of muscle fibers in the uterus is not or certainly not materially increased during pregnancy, but each existing fiber grows in size. In the puerperium again no fiber is lost by complete degeneration, but the enlarged cells only diminish in caliber till they have again reached their original dimensions. In the pregnancy under discussion the horn from the start had, as is of course to be expected, not a sufficient number of muscle cells to build up an adequate fruit-bearer for the enlarging ovum, and there were consequently left thin places, hardly provided at all with a muscular coat.

The one peculiar feature of the placental structure referred to above, is found in connection with the amnion, which has in some places formed *amniotic villi*, projecting into the amniotic cavity. These villi consist of a mesodermal core covered by a single layer of amniotic ectodermal epithelium. The mesodermal core does not contain any blood-vessels. These amniotic villi probably owe their existence to the fact that the amnion enlarged at the same rate an amnion grows in a normal uterine pregnancy. The amniotic cavity, however, in consequence of the inadequacy of the rudimentary horn, had to remain undersized and the amniotic membrane formed reduplications projecting into the amniotic fluid.

The ovary of the same side, on which the pregnant horn was found, and removed with the latter contained a large corpus luteum verum with

a nucleus of fusiform and stellate connective-tissue cells and the typical columns of lutein cells.

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MEMOIR OF DR. ROBERT P. HARRIS.*

Born 1822—Died 1899.

BY CHARLES P. NOBLE, M.D., PHILADELPHIA.

It has become my duty to address a few words to the Society concerning the life of our late member, Dr. Robert P. Harris. There were few men in Philadelphia better known to the profession than Dr. Harris, not only because his life had extended beyond the usual period, but because of the unique position which he filled in the medical life of our community. Dr. Harris was well known to each of us, and it is not only fitting, but I trust it may be profitable, to review briefly some of the main features of his life and character.

Dr. Harris was born in that portion of Chester County which is known as the Chester Valley, in 1822. He was a son of Dr. Wm. Harris, a well-known obstetrician in Philadelphia. He was a grandson, through his mother, of Robert Patterson, once provost of the University of Pennsylvania. Dr. Harris was one of a family of six children and spent his early life under the wholesome conditions which prevailed in Chester County during his boyhood. I have found it difficult to obtain many details which would be interesting to know concerning him, because he outlived his associates from whom those details could have been learned. I have not been able to learn of his preparatory education, nor from which university he obtained his degree in the Arts. He graduated in medicine in the University of Pennsylvania in 1844, and pursued his post-graduate studies in the Wills Eye Hospital of Philadelphia, the Pennsylvania Hospital, in the Demilt Dispensary of New York and in the medical schools and hospitals of Paris. In this way he obtained not only a liberal general education and an excellent preparatory training for the general practice of medicine, but in addition was especially trained as an oculist.

Dr. Harris entered upon the practice of his profession in Philadelphia and apparently soon abandoned his special work in ophthalmology for the more congenial field of medical research. For many years he held the position of being the greatest authority in the world upon the status of certain operations in gynæcology and obstetrics. He devoted a great amount of time to the careful compilation of the statistics of

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Cæsarean section and also of other allied operations and accidents having a bearing upon this operation; more especially the accidental wounding of the pregnant uterus. We are all familiar with his excellent paper upon the results of Cæsarean section as performed by the horn of domestic and wild animals. Ectopic pregnancy and operations performed for this condition in the interests of both mother and child also engaged his attention.

Among his more important papers are the following:

A study and analysis of one hundred Cæsarean operations performed in the United States during the present century and prior to the year 1878. 22 pp. (Philadelphia, 1879.)

Lessons from a study of the Cæsarean operation in the City and State of New York, and their bearing upon the true position of gastrotomy. 12 pp. (Philadelphia, 1879.)

Foot-binding in China. An account of the process and its effects; and a correction of many erroneous statements which have been made, chiefly by travellers, in regard to it. 17 pp. (Philadelphia, 1879.)

If a woman has ruptured her uterus during labor, what should be done in order to save her life? 22 pp. (New York, W. Wood & Co., 1880.)

The practice of obstetrics among the Chinese. 14 pp. (New York, W. Wood & Co., 1881.)

The revival of symphyseotomy in Italy, with comparative tables of the early and later cases, showing that the operation has been more frequently performed in that country in the last seventeen years than in all Europe in the previous eighty, and with far better results. The whole subject historically and clinically. 16 pp. (Philadelphia, 1883.)

Extra-uterine pregnancy treated by cystectomy or cystotomy without exsection. (1888.)

History of a case of twice-performed Cæsarean section under the late Prof. Wm. Gibson, with an autopsy of the patient made fifty years after the first operation by Drs. Caleb W. Hornor and Robert P. Harris. (1885.)

The operation of primary laparotomy in cases of extra-uterine pregnancy, with a tabular record showing the results in twenty-six women under twenty-six operations. (1887.)

The Porro-Cæsarean operation tested after a trial of sixteen years and in twenty-one different countries, under two hundred and twenty-four operators. (1893.)

Symphysiotomies of the United States and of Canada. (1895.)

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ject being a Pawnee Indian squaw, and the animal inflicting the injury on an American bison bull. (1887.)

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The blended Toccis brothers and their historical analogues.

Cattle-horn lacerations of the abdomen and uterus in pregnant women. (1887.)

The choice of methods in abdominal delivery. (1885.)

Classification of the Porro (?) operation. (1883.)

Cœliotomy: This and not laparotomy is the proper Greek synonym of abdominal section, laparotomy being an incision of the flank only. (1890.)

A defence of the Cæsarean section of America. (1882.)

Do close adhesions between the uterus and abdominal wall, the uterus or its appendages and adjacent parts within the pelvis, and between the uterus and omentum, complicate subsequent gestation and parturition? (1880.)

Does the removal of a foetus by abdominal section after a rupture of the uterus constitute a Cæsarean operation? (1881.)

The tat shang pin, or midwifery made easy.

Congenital absence of the penis, the urethra making its exit into or below the rectum, and emptying the bladder by, or exterior to, the anus. (1898.)

Perhaps he was best known in the literary world as editor of Playfair's system of obstetrics. He added very greatly to the value of a number of editions of this book by his notes on Cæsarean and other allied operations.

Dr. Harris was one of the Founders of the Philadelphia Obstetrical Society and the author of the first paper read before it. Its title is "On the Hereditary Convulsions of Infancy and Childhood." For many years he did valuable editorial work, more especially for the *Philadelphia Medical News*. Many years of Dr. Harris's life were spent within the walls of the library of the College of Physicians, and it was largely from this source that he drew the material for his many contributions.

Dr. Harris was also an enthusiastic horticulturalist and one of the Vice-President of the Pennsylvania Horticultural Society. His knowledge of many facts in connection with horticulture was most minute, and I have frequently heard him talk about the cultivation of fruits and vegetables in various parts of the world. One of his favorite pastimes

was the collection of seeds of various fruits and vegetables produced in one country and the distribution of the same in different climates, so that he might observe the behavior of these vegetables and fruits under varying conditions. He was especially interested in the cultivation of melons and cucumbers, and was constantly receiving and distributing different varieties to almost every country in the world.

All who knew Dr. Harris intimately were impressed by the many strong traits in his character. He was an indefatigable worker along the lines which he chose for his life. He was always intensely interested in all that concerned the progress of medicine, more especially that department with which he was specially connected. One of his most striking traits was his never-failing cheerfulness. In his later years he sustained not only the loss of friends by death, which is inevitable among elderly people, but in addition suffered very decided reverses in fortune and, being a bachelor, his later years had much in them to make him sad and lonely; but disappointment and bereavement never seemed to influence his disposition and up to his final illness he maintained the same cheerful disposition.

Dr. Harris was an earnest Christian and a loyal member of the Presbyterian Church. The qualities which he possessed that were most admirable were the simplicity of his character, the earnestness of his purposes in life, his sincere Christianity, his cheerfulness under adversity and his life-long diligence in following out the lines he had chosen for his work.

Dr. Harris had still another trait—that is, he devoted the best years of his life to purely unselfish work. He could look for no other reward for what he did than the commendation which comes from work well done.

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EDITORIAL.

PLASTIC SURGERY AND ABLATIVE SURGERY COMPARED.

Last month we pointed out the dignity and difficulty, the special training and aptitude required and the perfect results of plastic surgery in gynecology, when properly understood and performed. At the same time we called your attention to the general neglect and belittlement of this branch by the profession or, what is even worse, its reckless and ignorant pursuit by the incompetent. The causes of this anomaly, among so many who call themselves gynecologists, we stated clearly and incontrovertibly. With many, of the oncoming generation especially, the basic explanation is ignorance, pure and simple; to many others we regret to say, only a plea more unworthy and far less defensible can be attributed. Yet, in regard to both these classes of so-called gynecologists (and none can always avoid the necessity of its indications), the status of plastic surgery to-day is acknowledgedly unsatisfactory and tentative. Every day new operations are proposed to meet old indications, are greedily seized upon and hopefully applied, only to be discarded for the next promising novelty offered. In every case adjuvants, by way of the abdomen, are eagerly sought which will enable the plastic operation the better to accomplish that which, if such operation had been the proper indication in the first place, it must necessarily accomplish best alone. For, if a thing be exactly sufficient there is no

room, far less need, for any addition. At last, nearly all these meddlers in plastic surgery arrive at the same end. They become disappointed, naturally, with their results and finally disgusted with plastic surgery itself; they realize they have been the dupes of operative inventors who were themselves the unconscious dupes of their own ignorance. And at last they emphasize their failure by seeking more and more in ablative surgery a relief from the pursuing indications of plastic work.

Of course all this means but one thing, that the gynæcologists whom we have thus described—and we re-assert that they form the great bulk of those who practice plastic surgery both in this country and abroad—are so insufficiently trained in the principles and mechanical application of the specialty of plastic surgery that they are unable to recognize its true indications and are therefore obliged to make a physical application, more or less imperfectly, of every new operation presented. Thus they flounder on without defined purpose to ever-recurring disappointment.

But with the *true* plastic surgeon, the expert who has mastered the science and art of his specialty, the case is very different. He knows that his work must be based on the laws of mechanics and that these laws and their application are exact and unchanging. Therefore, when a new plastic operation is presented to him as an indication for a pathologic condition, his first act is a *mental* one. He immediately considers the particular mechanical laws whose proper application he knows to be necessary to a full restoration of the organ in question to anatomical and functional health. If he recognizes the fact, which should generally be apparent, that the operation presented does not fulfill or is opposed to the special indications which the principles of mechanics demand, he dismisses the operation from further consideration. It would, he knows, be as silly to submit it to a physical test, no matter how enthusiastically and statistically supported, as would be the suggestion to an engineer, for example, that he incline a dam downstream.

Therefore, if a plastic surgeon does not know of any operative procedure which exactly fulfills the indications of a certain diseased condition, he searches diligently until he finds it (if this be within the possible) but, having found such an operation, when perfected and complete he never changes it. Why should he? Is not the idea of medical practice to find a specific—to exactly fulfill an indication of disease? Yet it is a general reproach against those plastic surgeons who understand their specialty and whose results are uniformly satisfactory that they are conservative and are not ready and willing to

adopt new methods; *per contra*, a blind eagerness to test every new operation, on the all-sufficient reason that it is recommended by its inventor or some other authority who has failed with other methods, is to-day the rallying-cry of the self-styled progressive (sic) gynæcologists. These latter individuals seem not to recognize the fact that the mental state which permits them thus to be "blown about by every wind of doctrine" is also that of "the foolish man who built his house upon the sand."

We hear daily, and with justice, of the brilliant advances of abdominal surgery in its application to diseases of women. Not in a spirit of belittlement but merely in one of historical investigation let us compare the progress of ablative surgery and of plastic surgery (which is not termed "brilliant") for the past forty years. Let us consider the advent of each important operation and its fulfillment of indications, both proximate and remote, in each of these branches of gynæcological practice. We shall of course recognize here only operations performed as indicated by their authors.

Ablative Surgery: We may fairly begin with Tait's Operation for diseased appendages; for, at the time of the general adoption of this procedure began the adoption also of antiseptic methods in this country, which enabled us to judge for the first time of the value of an abdominal operation solely on its merits. *Indications:* Pus in the tube; ablation should always be bilateral. *Results:* Frequently restoration to health and cure of a recurring septic peritonitis. *Concomitant results:* Sterility; in many cases also prolapsus uteri from shortening of the broad ligaments ensues, from which the suffering is great and generally irremediable. From the same operation, for indications other than those of its author, such as any inflammatory organic change in either ovary or tube, the immediate results have been far less favorable and the concomitant results, such as we have enumerated, so grave that the complete operation (total and bilateral ablation) has now been abandoned by conscientious men except for the single indication first advanced by Tait, namely, pus in the tube. And even here, when the pus is sterile, an attempt is generally made to restore its patency and leave a portion at least of the organ. Next we may consider Ovariectomy carried to its present status by the use of aseptic methods. *Results:* Generally perfect; patient cured. For Hysterectomy, both abdominal and vaginal, we find the following accepted *Indications:* Carcinoma, fibroma, endometritis, ablation of the appendages and prolapsus uteri. *Results:* In Carcinoma hysterectomy is eminently unsatisfactory although it is the best procedure now

at our disposal. When cancer is clearly recognized it is generally too late for permanent results from extirpation. In fibroma also hysterectomy is a very inexact indication. So clearly is this realized that many methods have been practiced with the hope of obviating removal of the uterus, such as electricity, myomectomy, awaiting results of the menopause. For the other conditions mentioned, namely, endometritis, ablation of the appendages and prolapsus uteri, hysterectomy is in no true sense an indication at all, though so practiced by many. It is clearly an acknowledgement of inability to meet successfully, on the part of the particular operator, the evidently true indications of these pathologic conditions. In the first two the symptoms are caused by inflammatory changes in the uterus and pelvic tissues and the logical indication evidently here is to cause resolution and absorption by the persistent and intelligent use of local applications. Such a course of medical treatment does not appeal to the "brilliant" surgeon, however; it seems much simpler to him to ablate the indication by removal of the organ in which it occurs. Hysterectomy for prolapsus uteri is a conscienceless procedure for which the implied ignorance of plastic methods forms no excuse. *Concomitant Results:* After hysterectomy, for whatever cause and under the best conditions, the following results are frequently found: Intestinal adhesions, pelvic adhesions, prolapse and hernia of the vagina; these in combination are practically incurable and in many cases make the patient's life far less endurable than it was under the previous conditions.

To summarize, then, we would say that only in one pathologic condition is radical ablative surgery almost certainly curative without concomitant and subsequent results of serious and frequently painful import to the patient. Even sterility alone as a result, due to absence of the ovaries, has frequently produced such important mental and physical disturbances that leaving these glands in hysterectomy has been recommended as a prophylactic and even the use of the gland extract has been practiced as a treatment. Only in unilateral ovariectomy for cystoma is the patient almost always really and finally cured of all symptoms without the exchange of these for other symptoms of greater or less gravity. We have so far referred specifically only to ablative surgery through the abdomen; but that through the vagina has equal disadvantages. It is merely a difference of degree not of kind. It transfers to some extent the site of the subsequent symptoms and adds others peculiar to the pelvis alone.

While freely acknowledging that in ablative surgery, when really

indicated, we have the best agent at our command, we have at the same time desired to show that, however "brilliant" it may appear in its operations, its ability *to cure* is extremely limited and that in most instances it demands and takes away much from the patient in exchange for the relief it brings.

Plastic surgery, *per contra*, which is distinctly gynæcological in a sense that ablative surgery can never be, *cures* the patient of symptoms generally of far greater subjective intensity and endurance than exist when ablative surgery is indicated and, at the same time, it demands in exchange the loss of no organ or function. Any good general surgeon can practice ablative surgery in women with success and most of them do. We will go further and say that any intelligent butcher, with the transfer of his anatomical knowledge to the human body, could with little additional technique perform ablative surgery with equal manual dexterity. But plastic surgery demands knowledge and training with especial technique which makes it indeed a *specialty* and this fact accounts for the large amount of bungling effort, on the part of gynæcologists, which has brought it into disfavor with the ignorant and incapable.

As a parallel to the achievements of Ablative Surgery, let us run over the operative advance, during an equal term of years, of Plastic Surgery: The cure of Vesico-vaginal Fistula heads the list—formerly an incurable disease; the cure of Endometritis, true and false, and of Pelvic Inflammations and their results; the cure of Prolapsus uteri, as the result of laceration of the cervix and of the pelvic floor (which includes laceration of the fascia of the anterior and the posterior vaginal walls); the cure of Laceration of the Sphincter ani; the cure of Laceration, Ulceration and Prolapse of the Urethra; the cure, by restoration, of the Base of the Bladder and the entire Urethra; the cure of Retroversion and Flexures of the Uterus; the cure of Rectal and Anal Fissures. And with these conditions are cured many other symptoms of such subjective gravity that they were formerly and still are by many referred to as distinct diseases.

In all that plastic surgery accomplishes, as we have said, not only is there a complete cure of symptoms but the restoration of the anatomical appearance and the functional activity of the part operated upon must also be complete. No plastic surgeon is satisfied with his work until he has accomplished all of this.

It would be well indeed, both for the reputation of gynæcologists and the physical condition of our patients, were the profession to recognize the truth of the contention we have made, namely, that the only *spe-*

cialists in gynæcology are properly-trained plastic surgeons and that to practice plastic surgery merely because one calls oneself a gynæcologist and has had experience in ablative surgery is about as dishonest as it would be were a specialist in venereal diseases to practice gynæcology on the plea that he understood the treatment of gonorrhœa and syphilis and that women were subject to these diseases.

REVIEWS.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by H. A. HARE, M.D. Vol. II. Lea Brothers & Co., Publishers.

In this age, when more ink than blood is shed by the medical profession, the alleged busy practitioner would be kept busy indeed by his efforts to keep up with the literature of to-day were it not for the compendiums.

In this volume, as in its predecessor, the personal element and the narrative statement of the progress made in medical science are attractive features and lend additional interest to its pages.

The second volume of "Progressive Medicine" presents carefully prepared papers upon the following subjects: "Surgery of the Abdomen, including Hernia," by William B. Coley, M.D.; "Gynæcology," by John G. Clark, M.D.; "Diseases of the Blood, Diathetic and Metabolic Disorders, Diseases of the Spleen, Thyroid Gland and Lymphatic System," by Alfred Stengel, M.D.; "Ophthalmology," by Edward Jackson, M.D.

The editor is fortunate in the list of contributors, and the high standard set by the first volume is well maintained by the second. The illustrations are well executed and the typographical work is excellent.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL
SOCIETY.

Stated Meeting, April 21, 1899.

The *President*, Dr. NICHOLAS SENN, in the Chair.

Multiple Uterine Fibroid.

Dr. F. H. MARTIN: The specimen of multiple fibroid I exhibit is interesting first, because it is complicated with pregnancy; second, be-



cause the pregnancy, if it had been possible to go to term, could not have been delivered; third, because of the difficulty of an accurate

diagnosis. The pregnancy was of about two-months' duration. The patient was colored, forty-two years of age, had been married fifteen years, and had been sterile, this being the first pregnancy. The fibroid had not given rise to urgent symptoms at any time, although its presence had been known for several years, until pregnancy caused enlargement of the uterus and precipitated pressure symptoms, this pressure causing severe pain and obstruction of the lower bowel. While pregnancy was suspected, bimanual palpation, under anæsthesia, did not enable me to make an accurate diagnosis of pregnancy. But while examination did not exclude pregnancy, it did demonstrate multiple fibroids, with one so placed as to interfere with normal labor, and another which would undoubtedly prevent pregnancy going to term.

This drawing represents accurately the specimens as it appeared fresh. The fibroid here was developed low in the broad ligament, so that it could be felt at the side of the vagina. This one, above that, to the side of the cervix, was a second large center of development, at least $2\frac{1}{2}$ or 3 inches in diameter. Above that, between it and another center of development, was the foetus, which is accurately represented here. Above the foetus was the rather large fibroid, which would have prevented the uterus from developing, so that hysterectomy was done. Exploration demonstrated pregnancy and also that nothing short of complete hysterectomy would solve the problem and save the life of the woman. Myomectomy would not do in this case.

Preliminary Observations on the Relation of Some Intrapelvic Conditions to Blood States in Women.

BY C. A. L. REED, M.D.

(See page 195.)

DISCUSSION.

Dr. F. H. MARTIN: I would like to express my gratitude to Dr. Reed for his paper and for the many suggestions which it contains. In this paper, as I understood it, an effort was made to make leucocytosis appear as a diagnostic sign of pyosalpinx, and of septic conditions in the pelvis exclusively. I am curious to know if Dr. Reed does not consider it true that leucocytosis occurs in almost any case where there is septic process, anywhere in the body?

In regard to the cause of impairment of the blood, the reduction

of the hæmoglobin and of the red blood-corpuscles, it seems to me there are explanations for that condition in pelvic difficulties which were not dwelt upon to the degree they might have been, although in the beginning of the paper the points I have in mind were touched upon, that is, in regard to the intimate sympathetic-nerve connection between the uterus and the other organs of the body. We all know that the uterus is supplied with sympathetic nerves as no other organ is so supplied, with the exception, possibly, of the heart; that the pelvic nerves of women, the hypogastric plexus, the pelvic plexus, and the other minor plexuses in the pelvis are enormously developed, compared to the same plexuses in man. And we know it to be a fact that the uterus is intimately connected with the heart, lungs, stomach, and intestine. That any irritation about the uterus, as retroversion of the uterus, laceration of cervix, or diseased appendages, will in a very short time produce characteristic symptoms, including palpitation of the heart, interfering immediately with the circulation of the blood. We know that in a very short time after any profound irritation of the pelvis begins there is a decided interference with the digestion, with the action of the stomach; that in a very short time the woman will not only complain of stomach indigestion, but will also complain of intestinal indigestion and interference with assimilation of food in the intestines. In other words, as soon as we get a profound irritation of these sympathetic nerves in the pelvis we get interference with digestion and assimilation, and as a result of this disturbance we get a reduction in the supply of materials to the blood, which I think will account to a great extent for the facts brought out in the paper.

The other points elaborated in regard to the absorption of the toxins, etc., would only be a secondary consequence of the disturbance of rhythm between these organs. Another point I would like to question a little, if not criticize, is the method of treating cystic ovaries recommended by the essayist, by tapping the cysts. He speaks of the cystic ovary causing profound symptoms. Nothing is more true than this statement. These small cystic ovaries are because of retention of fluids in the sacs of the Graffian vesicles. In a great many of these cases the ovaries will be chock-full of retention cysts, until the stroma of the ovary is almost choked off, as stated by the essayist. Now, these cysts, if incised thoroughly and removed as far as they can be removed will cause a regeneration of the stroma of the ovary as rapidly and effectually as where you remove retention cysts of the kidneys where the kidney proper has been almost destroyed by hydronephrosis. I believe these cases should not be treated by removal of the ovaries, that

the cysts should be incised, I sometimes incise half a dozen cysts, and if there is an atom of ovarian tissue that is not septic, left, I believe that it should be preserved, that it will regenerate and perform its function.

Dr. C. S. BACON: In the observations that have been made by Dr. Reed pelvic disease has been chiefly considered as a factor in the change of the blood states, as I have understood the presentation of the subject; a reciprocal relation where the blood states are a factor in the causation of pelvic disease has not been so much gone into. Of course, it is impossible to separate the two relations, but the second one is extremely important, and I would like to add, with the hope of perhaps getting a suggestion on the subject from Dr. Reed, a word concerning the relation of the blood states to the causation of uterine hæmorrhage. The subject is important both to the gynæcologist and the obstetrician. We are quite apt to think of local changes as the cause of hæmorrhage in nearly all cases and leave for a secondary consideration the idea that perhaps the hæmorrhage is due to the blood state. It is the experience of nearly every one that where there is a rather obstinate uterine hæmorrhage the patient is at first supposed to have some pathological uterine condition, such as polypus or metritis, and is treated without result by curetting, cauterization, etc. It is then, perhaps, finally discovered that the trouble is due to changes in the blood state. That I would emphasize by relating briefly an extremely interesting case, that I have recently seen, where a patient with little apparent cause, simply the introduction of a sound through the cervical canal, bled an enormous amount, losing, perhaps, two or three pounds of blood, at least a quarter of the weight of the body. The blood was of a peculiar tinge and rather thin and dark. This afterwards was discovered to be a patient who had had a malarial infection which lasted for some time and exhibited itself as a severe neuralgia, the malarial origin of which was determined by discovering the plasmodium. It had been cured by quinine. The resulting condition of the blood in this case probably explains the hæmorrhage. So in post-partum hæmorrhage we frequently think of one of the two chief classical causes of hæmorrhage, namely, atony of the uterus or lacerations, while there may be undoubtedly a condition of the blood which prevents coagulation. So the acute dyscrasias, the acute hæmophilias, the acute pathological conditions I think should be emphasized and their bearing on the pathological conditions of the pelvis considered.

In the description of hæmorrhages associated with severe pain I have wondered if there is any connection between what is sometimes

called hysterical hæmorrhages and these conditions. That hæmorrhage occurs as a symptom of hysteria is, of course, well known, and that a menstrual hæmorrhage, that is a menorrhagia, can also appear as a sign of hysteria or one of the accompaniments of hysteria, I think is well known, and the relation of that to ovarian disease is extremely interesting.

Dr. F. HENROTIN: I take pleasure in adding a word to voice the sentiments of the Society as thanks to Dr. Reed for his valuable and suggestive paper. It shows the trend of gynæcology at the present time. It may be said that probably gynæcology *per se* has about reached its limit. There will be an infinite variety of details hereafter regarding the results of technique, but the child has returned to its parent of general medicine and the future of gynæcology will present very few landmarks; its success and development in the future will depend upon the general internal medicine man and upon the pathologist and the work that is done in that direction, therefore Dr. Reed's paper is particularly timely as showing the trend of the gynæcological work of the day. The demonstrations he has given us of blood changes are certainly of considerable importance, but, as he says, they are not at all conclusive, they are simply a stimulation for us to work in that direction. Most of the work done has been in the examination of the urine, and blood examinations have not been carried out to their fullest extent. It is certainly important and valuable to hear papers that demonstrate the possible value of such examinations in the future. There being no definite conclusions arrived at, it is extremely difficult to have a conclusive discussion. It does not pertain particularly to gynæcology any more than to surgical conditions generally, but we owe thanks to the Doctor for indicating the lines to be pursued hereafter.

Dr. C. A. REED, in closing the discussion: The remarks that have been made are certainly of the kind that I appreciate very highly.

In reply to the question of Dr. Martin as to whether or not this condition of leucocytosis with the states I have described does not occur as a general incident of the suppurative process in almost any place, I answer, yes, it does, and so far as there is any value attached to my observations in that particular it goes to show that the suppurating inflammations occurring within the uterine cavity and within the lumen of the Fallopian tubes are no exception to the rule of general infections. That is about all the importance attached to it.

I thought nearly all my paper depended upon the relationship of intrapelvic infections to this general constitutional state. The important feature of my paper is to show that these infections have not

only an influence upon the blood, but that they do attack the hæmoglobin, and in that they exercise a deeper influence upon the circulatory fluid than if they related to the hypergeneration of leucocytosis. If there was one point in my paper more than another that I endeavored to emphasize it was the instrumentality of the sympathetic system in reducing the influence which originates within the pelvis upon the general hæmagenetic function and the hæmagenetic organs, and these are brought about by the influence of these morbid impulses. (I have often likened the pelvic organs of women to a sort of central telegraph office, whence are dispatched messages to all parts of the system, but disturbing ones. That is emphatically proven, I think, by observations, of which mine are only a part, namely, that one of the first things we have manifested is the upset digestion, and arrested peristalsis, inducing constipation, and then we have the hyper-absorption and taking up into the blood-circulation the hæmatolytic agencies and the retention in the circulating fluid of the metabolic products, which are also hæmatolytic in their influence.

I wish to express my appreciation of the remarks made by Dr. Bacon. They are directly in line with the thoughts which I expressed, but are beyond the scope of my inquiry. They simply show another direction in which these observations should be carried. I am quite sure many of these hæmorrhagic cases are to be accounted for by the hæmatolytic influence of preëxisting conditions, and that the primary cause of many of these hæmorrhages is to be found in pelvic conditions that have gone unrecognized, which has not only resulted in the destruction of blood-corpuscles, but in different conditions of the hæmoglobin. I think that is a line of inquiry which it would be well to take up and prosecute to a logical conclusion. I would especially call attention to the importance in obstetric practice of assuming charge of these cases and in the course of preparing the woman for child-bed examine her blood and see that it is in a satisfactory state. It is not at all difficult to do and adds one more element of precision to the management of these cases. I wish especially to thank Dr. Bacon for his kindness.

My friend, Dr. Martin, will pardon me if I enter a dissenting note to his observation with regard to the management of cystic ovaries in this class of cases. I am well aware that Martin of Berlin many years ago promulgated as a doctrine, instead of enucleation, the tapping and treatment of these cysts that are isolated. That is very true where you have some tangible amount of ovary left, where you have one large cyst, which is always a retention cyst, you can tap it. But my experience with this class of cases in practice has not been satisfactory, and

all too frequently I have been called upon to do a secondary operation for removal of these ovaries, which I had endeavored to save by the so-called conservative method. I happen to be just now engaged upon the investigation of this particular subject, and the result of my correspondence in Europe and America is confirming me in thinking that this is a questionable practice and one that should not be indulged in unless the preponderance of doubt is largely on the side of the probable reconstruction of the tissue, and I must say that is a proposition which lacks demonstration.

Cornual Pregnancy.

BY CHARLES E. MANIERRE, M.D.

(See page 212.)

DISCUSSION.

Dr. C. S. BACON: This paper is a very interesting and important one. Important, because it calls up an important subject; interesting because important facts are brought out in a clear and concise way. The importance of this subject is of course not measured by the frequency of the occurrence of rudimentary-horn pregnancy, for this is very rare, but by its importance in the question of diagnosis between this and other tumors, especially tubal pregnancy. The relative frequency of these cases and tubal pregnancy, which Fraenkel puts at 3.67 per cent., it seems to me, must be an exaggeration. We have in this city 100 or more cases of tubal pregnancy operated upon every year, cases which every hospital reports, while we have very few cases of cornual pregnancy reported, and so far as I know none has been presented to this Society. It is true that in 1897, in the *Jahresbericht*, there were eight cases of cornual pregnancy reported, but not all occurred in that year. The occurrence of cornual pregnancy is very rare, but extremely important from a diagnostic standpoint.

In connection with what Dr. Manierre said as to the causation of the pregnancy in these cases where the pedicle was closed and where the egg, or at least the spermatozoa must migrate from the other side, it is important to remember that the ciliary stream is undoubtedly an important element in carrying the egg into the tube and undeveloped horn. The cilia of the tube as well as of the fimbriated extremities all have motion towards the uterus, which causes a stream into the tubal

cavity and would probably be the chief factor in carrying the fertilized egg across and into this cavity. In this connection a very interesting fact might be mentioned that is stated by Collins in his report of a case where the horn ruptured. A post-mortem was made and in the tube on the other side several masses of placental cells were found. These placental cells must have been carried around after the rupture of the horn into the tube of the other side, evidently by this ciliary stroma.

The explanation of the non-occurrence of hæmatomeila in these cases is certainly very interesting. It of course is not true that it never occurs, but its very rare occurrence is very interesting in this connection. The fact that hæmatometra rarely occurs in cases where there is atresia of the uterine canal and in cases of poorly developed uterus is also interesting.

In regard to diagnosis, it was rightly made the important feature of the paper. It might be well here, as in cases of tubal pregnancy, to call especial attention to the danger of bimanual examination. Of course bimanual examination is extremely important and must be made with the utmost thoroughness, but the danger of any bimanual examination is here as great as in cases of tubal pregnancy. There is no doubt at all but a great many ruptures are caused by bimanual examination, and it seems probable that in Collen's case the rupture may have been due to the examination made. We can see from the pathological report of Dr. Manierre's case that it would have been an easy matter to cause rupture because of the thin wall. So the danger of the examination, I think, should always be emphasized and the rule given that before a thorough examination is made under an anæsthetic, if such an examination is deemed necessary in case of doubtful diagnosis, the patient should be first prepared for the operation, so that in case rupture did occur accidentally the case could be at once operated upon. As the essayist very properly says, it is almost impossible to operate if the preparation must be made after the rupture has occurred.

The question of the decidua in the other horn is of some importance in diagnosis, just as in tubal pregnancy, and it would seem from the reports as if it did occur, at least in several cases. In Cullen's case there was a decidua in the non-pregnant horn, so that would be a feature in the diagnosis, because the discovery of a fragment of decidua without the presence of villi would of course show either a tubal pregnancy or cornual pregnancy. One point in the diagnosis that was not called attention to was made by Cullen and might possibly be of im-

portance, namely, the sharp flexure of the non-pregnant horn at the internal os.

One other point that I did not hear emphasized was the place of attachment of the round ligament, which, of course, in this case, would be to the outside of the sac. The increased mobility as being such an important point is certainly interesting.

In regard to the specimen, it is unfortunate from a scientific standpoint that the condition of the pedicle could not be determined. The thin wall of a portion of the sac is interesting, but I do not understand from the description that the place of attachment to the sac was given, whether the tube came from the upper or lower part of the sac. The growth of these sacs where a portion of the uterus is above the attachment and the tube stretches is the probable reason for the thinness of that portion, and that is the reason of the rupture. The rupture always occurs just above the location of the tube and a large portion of the sac doubles over the upper part of the uterus and consequently becomes very much stretched out and thin-walled. It would be interesting in this case to determine if possible whether this thin portion was a portion of the uterus above the attachment of the tube.

Dr. C. A. L. REED: Mr. President, in response to your invitation I will say that the paper itself has left very little to be discussed. The Doctor has covered the ground with great fidelity to detail, and with an analytic ability that has brought each particular fact into its most important relationship. I have not had a large experience in ectopic pregnancy, and I have had a still more limited one in dealing with cornual pregnancy. It is cornual pregnancy to which I believe Barnes has applied the term ectopic, and I think it is perhaps to that particular form of eccentric pregnancy to which the word should be restricted. The condition has occurred in my practice I think twice, perhaps three times, but the third time is not a very well-determined case. One particular case I would refer to because one end of that experience occurred in Chicago. I operated on a woman a few years ago for cornual pregnancy. It was evidently in the uterus bicornis, the sac had developed and the tubal distention was restricted to the uterine extremity and the inframural portion of the Fallopian canal was itself the seat of the central implantation. This was excised and an ellipse of tissue cut out from the cornu. It was closed, and the patient made a satisfactory recovery. Fifteen months after that I received a letter from Dr. Carl Beck of this city reporting the case with a second occurrence of ectopic pregnancy in this patient. It seemed that she had developed one on the other side. Both reports of that case were published almost simul-

taneously. The other case, I am sorry to say, was a fatal one, because the condition was not recognized until hæmorrhage was so far advanced that the patient died from shock within an hour after the conclusion of the operation.

I can only reiterate my high appreciation of the paper, which I recognize as a valuable summary of the experience of other people and the study of other investigators, and a valuable contribution to the literature.

Dr. EMIL RIES: I have had a case of cornual pregnancy under my observation in 1891, which was operated on after it ruptured, and the patient recovered. The diagnosis at the time rupture occurred was extra-uterine pregnancy, based on the history of cessation of menstruation, enlargement of the breasts, discoloration of the vagina, cholostrum in the breasts, and sudden collapse, with symptoms of internal hæmorrhage. The patient came into the hospital in such a miserable condition that all attempts at careful diagnosis and examination had to wait until her life should be saved. We were satisfied with a diagnosis of internal hæmorrhage and operated immediately. Professor Freund opened the abdomen and as soon as he reached the peritonæum the blue color of the blood in the peritonæal cavity showed through, and on incision immense quantities of blood escaped. As soon as the uterus was taken hold of it was discovered that the right undeveloped horn had ruptured and that through the rupture the fœtus and the cord had escaped into the abdominal cavity, still connected with the placenta. The pedicle in this case was higher up than is usually described in the text-books. This was amputated, with the ovary and tube, the wound of the left horn closed by suture, and the operation finished in the usual way. The patient recovered without difficulty. It is noteworthy that three or four days after the removal of the rudimentary horn the patient discharged a complete cast of the left uterine horn, which I examined microscopically. The result of this microscopic examination, together with several other pardeciduas, that is, deciduas from non-pregnant horns, I published in the *Journal of the American Medical Association* in 1896. The case of the essayist differed from the case I observed in that it was not operated upon after rupture, but before rupture. It is, of course, an entirely different matter after rupture, the question of operation is much more easily decided upon than before.

As to the diagnosis of these cases, I wish to speak against the use of the probe of intra-uterine sound in the diagnosis of extra-uterine pregnancy. The probe does not help a bit, and it may produce contraction of the uterus and the tubes or the rudimentary horn and a rupture.

Careless manipulation of the extra-uterine sac or rudimentary horn is apt to produce rupture and intra-uterine manipulations are even more dangerous and I would advise strongly against them. I have only seen harm come from them, if not immediate rupture it was infection. I have recently seen a case of Dr. Schaefer's at the Post-Graduate Hospital, where he made a diagnosis of extra-uterine pregnancy before the case came into the hospital in a miserable condition on account of infection by some other physician who had introduced instruments. The case was hopeless when it came into the hospital. Post-mortem showed a beautiful extra-uterine pregnancy in the right tube.

The second point, as to the presence or absence of the decidua in the non-pregnant horn. I believe there can be no doubt about it. I have seen three cases where the non-pregnant horn discharged a complete decidua. These deciduas from the non-pregnant horn are of considerable importance to the microscopist, since the fight as to what is of foetal origin and what is of maternal origin has become so important. If we have a decidua develop in the horn of a double uterus which is not pregnant, that decidua, of course, cannot contain anything that is foetal, and whatever is found in it must be maternal. If we find a syncytium in such a decidua from a non-pregnant horn of a double uterus it proves conclusively that it is not of foetal origin, and the fact is that the decidua of the non-pregnant horn does show syncytial masses.

Dr. Herzog, in his report, speaks of amniotic villi. I beg to object. He has not proven that they are villi. At the best he can show that they are folds, wrinkles. I do not doubt that, but there is nothing remarkable in that. If the Doctor will look up Schroeder's Atlas of the pregnant uterus he will find the folds described there. At any rate one section does not prove that these elevations are villi, and from my experience I know that they are folds.

Dr. M. HERZOG: The case of Dr. Manierre has interested me particularly with reference to the development of the placenta and as to the behavior of the walls of the pregnant horn. I have had quite a little experience in the histologic examination of the normal placenta and of the foetal and maternal placental structures as they occur in tubal pregnancy. Of the latter condition I have examined microscopically from twenty-five to thirty specimens. As stated in my report of Dr. Manierre's case, the cornu in this pregnancy has behaved like a normal pregnant uterus and not like a pregnant tube. However, with that exception, that we had in the horn one very thin, practically membranous, place. It appears from the work of Saenger, Broers, and others that the muscle-fibers of the uterus are not increased in number

in pregnancy, or certainly not materially, and, on the other hand, are not lost after parturition. What occurs is first an increase in size from 40 to 60 μ to 300-600 μ , and then, after parturition, a decrease to the non-pregnant size. The horn in Dr. Manierre's case probably never had enough muscle-fibers from the start to accommodate an enlarging ovum, and there was consequently soon left a thin membranous place, while the rest of the wall was of a solid muscular character. A pregnant tube, very early, already in the course of gestation, usually is quite thin, because there are present from the start a comparatively small number of muscle-cells only. There are also found early in tubal pregnancy signs of inflammation. What causes these inflammatory changes? The answer one receives from histological studies is that the vessels, probably in consequence of stretching, become the seat of endothelial and subendothelial proliferative processes, while the tissues in general show areas of focal necrosis, to which leucocytes are attracted by positive chemotaxis.

Dr. Ries objects to the term amniotic villi. I have by this term, of course, not implied that these amniotic ridges and projections are vascular villi; they are not. They are ridges and papillary projections, consisting of a mesodermal layer and an epithelial ectodermal layer. The frequent foldings of the amnion Dr. Ries refers to are not identical with what I have observed in this case; the former are, as a rule, only observed when there have been intervillous hæmorrhages which have dissected the chorion and amnion away from the decidua reflexa.

• Dr. RIES: The question of villi or ridges is not one of the absence or presence of blood-vessels, it is something entirely different. It is the same as in the skin. If you cut villi across you get a number of circular outlines. If you have ridges and cut them across you get a number of more or less parallel lines. That is the difference I mention. If there were amniotic villi you would see a papillary surface, if they are ridges you see folds. It is not a difference of blood-vessels, but of outline. The origin of these folds is probably simply a retraction, the amniotic sac is under a certain tension from the amniotic fluid in it, and if by puncture of the sac or by normal rupture of the bag of waters this tension is relieved it wrinkles up, and that is why we find it under the microscope in this condition.

Dr. HERZOG: The term villi is by no means only used with reference to the chorion, it means something like papillæ, and in that sense I have used it.

Dr. C. E. MANIERRE, in closing the discussion: Dr. Bacon tried to explain how the ovum gets from the ovary on one side to the tube on

the other by means of the ciliary stream. But unless I am very much mistaken, there is no ciliary stream in the peritonæum.

The Doctor referred to the point of excessive mobility of the uterus referred to in the paper. I do not want to be understood as saying that excessive mobility was always present in this class of cases; it is only in the cases where there is a long pedicle. If the uterus is imperfectly divided, if there is simply a slight distinction between the two horns, then of course we get absolutely no mobility. But where there is a distinct division between the horns and the pedicle is moderately long we get considerable mobility. I want to emphasize the fact that occasionally we do get a great deal of mobility, and that when this is present it might be a sign of undoubted value.

In regard to the round ligament as a diagnostic point, I cannot see how it can be of any particular use in a clinical diagnosis. Of course, after we get inside of the belly, then the round ligament shows whether we have a tubal pregnancy or a horn pregnancy, but I think it would be very unusual to use the round ligament as a clinical diagnostic sign in very many cases.

Dr. Ries refers to the use of the probe. I heartily concur in his statement. The reference I have made to the use of the prob has simply been in giving cases which other men have reported. I did not use a probe in my own case, I do not believe in the use of the probe at all and never use it clinically. I never introduce the probe into a uterus unless I am prepared for operation, unless my patient is anæsthetized and rendered aseptic. In fact, about the only use I make of the probe is during curettement, or something of that sort. I do not use it for diagnostic purposes, and think it is of very little value ordinarily, and I have always been afraid of it, afraid of infection or of doing damage.

I do not know where Dr. Ries has concealed his case. I am sorry I did not find it, because I have searched long and earnestly for these cases, but I am glad to have the case reported because I supposed there had never been a case operated after rupture that had recovered.

Official Transactions.

C. S. BACON, *Editor of Society.*

Stated Meeting, June 16, 1899.

The *President*, NICHOLAS SENN, M.D., in the Chair.

Report of Two Cases of Probable Complete Tubo-Abdominal Abortion.

Dr. T. J. WATKINS: From the title you will observe that the diagnosis in the cases that I will report is not positive. I believe, however,

when I tell you the clinical history and relate the result of examinations, that you will consider me justified in making the diagnosis. Such cases undoubtedly occur, as is frequently mentioned in the literature. I know of no case where the diagnosis has been verified by an operation and am guilty of not looking up the literature relative to this point.

These two cases are the only ones that I have observed where the diagnosis seemed certain, and both came under my care during the same week.

Case I.—Mrs. F., aged thirty-five; married fifteen years; no history of a previous pregnancy. She came under my care eight years ago, suffering from menorrhagia, due to a myofibroma of the uterus, which extended to the umbilicus. She was treated by galvanism and the tumor entirely disappeared in the course of one year. The uterus, after remaining about normal in size for about one year, again enlarged to the size of a four-months' pregnancy, and gave all the characteristics of a myofibroma. She was again treated by galvanism and the uterus soon became normal in size and has remained so. Her history or examination gave no evidence that she has ever had an infection of the pelvic organs. This case and one other are the only ones where I have observed the entire disappearance of the growth after the use of galvanism. I do not know how much effect, if any, the electricity had, and I have so little confidence in it now that I almost never use it in the treatment of these growths.

The present history dates from April first, when she consulted me at my office on account of pain in the region of the left ovary. Examination gave a suspicion of slight enlargement of the left uterine adnexa. The pain, tenderness, and apparently slight enlargement were attributed to ovulation, as it was about the time for her regular menstruation and as previous examination had never shown enlargement in that region; about one week later I was called to her house on account of the pain in the left side. Examination now revealed a mass to the left of the uterus about the size of a lemon. The uterus was slightly enlarged and the cervix seemed somewhat softened. She was one week past her menstrual period, which had before always been regular. A tubal pregnancy was suspected. It was thought best to watch the progress of the case for a short time before advising operative treatment. Two days later a bloody discharge occurred from the uterus, the pain became less, and the enlargement did not increase in size. The bloody discharge continued for about one month, when she was curetted. No decidua membrane was found. At the time of the operation the mass to the side of the uterus had entirely disappeared. The breast and stomach

symptoms of pregnancy were absent. The scrapings from the uterus showed some thickening of the endometrium, but microscopical examination failed to show any decidual cells. The probable diagnosis is based upon:

1. Delayed menstruation, of one week, which before had been regular.

2. Pain, tenderness, and swelling of recent origin to the left of the uterus.

3. The knowledge of absence of any former disease of the tube or ovary.

Absence of decidual cells in the scrapings does not disprove the diagnosis, as the decidua may have been entirely cast off before the curettage was made. The disappearance of the swelling is valuable evidence in favor of the diagnosis.

The most important consideration in this case is the treatment. Although the expectant treatment which was followed gave satisfactory results, I may deserve criticism for assuming the risk attendant upon hæmorrhage from rupture of the tube.

How can one determine which cases of unruptured tubal pregnancy should be operated upon at once, and which should be treated on the expectant plan?

The following considerations are of some service in determining this:

1. The location of the swelling in the tube.

2. The character of the pain.

3. The behavior of the swelling during the progress of the case.

Pregnancy in the proximal half of the tube is almost certain to rupture and call for immediate operation. There are, however, two cases, I believe, one of Dr. Bache Emmet and another, where it seems most probable that a pregnancy in the tube near the uterus aborted into the uterine cavity. I had one case where I felt positive that I could palpate a round ligament between the uterus and pregnancy, which resulted in an uterine abortion. It seems, however, that the danger of mistakes relative to palpation of the round ligament is too great to put much reliance upon it as a diagnostic sign.

Pregnancy in the *distal* portion of the tube will in all probability almost invariably result in abdominal abortion. This, however, may be incomplete and indicate operative interference but, not as a rule, immediate action. In cases with a thick abdominal wall, which the above case had, it may be difficult or impossible to determine the location of the pregnancy in the tube but, with a relaxed, thin abdomen,

the proximal end of the tube in cases of pregnancy in the distal half can be rolled between the fingers on conjoined palpation.

The persistence of severe, remitting or intermitting pains does, I believe, favor tubo-abdominal abortion more than one that is apt to result in rupture, as in cases of rupture slight shooting pains are as a rule the only ones that antedate the severe pain that takes place at the time of rupture. The labor pains of the tube during abdominal abortion are, I believe, always severe and extend over a comparatively long space of time.

In cases where the pregnancy remains entirely within the tube the swelling will continually increase in size. The above case is, I believe, an illustration of how the mass will gradually diminish in size, in cases of complete tubo-abdominal abortion, after the uterine hæmorrhage begins.

In cases of incomplete tubal abortion the increase in size of the swelling will be comparatively rapid.

Case II—Mrs. G., aged twenty-five; married one year, never pregnant. I was called by the family physician to curette for menorrhagia. Her history in brief was: Menstruation always regular until six weeks before I saw her. She skipped her menstrual period about two weeks, then commenced to have slight uterine hæmorrhage until I saw her, which was four weeks ago. She had not been confined to bed, but had had slight pains, severe at times, in the region of the right tube. She gave no history of having had any previous pelvic disease and examination showed no evidence that she had had any pelvic infection. No history of passage of decidua nor of stomach or breast symptoms of pregnancy.

Examination under anæsthesia showed uterus somewhat enlarged, cervix slightly softened, canal patulous, and a mass to the right of the uterus. The proximal end of the tube could be rolled between the fingers on conjoined palpation, and the ovary could be differentiated from the tube.

Curettage showed the uterine cavity exceptionally smooth; the amount of tissue removed was so slight that it was not preserved for microscopic examination. The diagnosis was based upon about the same considerations as in the previous case.

The expectant treatment which was followed in this case was positively indicated, as there was practically no danger of sudden rupture, considering the size of the swelling, after the tenth week, which this patient had passed. About six weeks after operation, examination showed the pelvic organs apparently normal.

Report of a Case of Dilated Fallopian Tube.

Dr. WATKINS: The patient was sent to my service in Wesley Hospital by Dr. Joseph Trenchard, with a diagnosis of perforated uterus. He was called to see her after she had been confined to bed ten weeks with continued fever. He explored the uterine cavity and detected with a uterine sound what he considered a perforation of the uterus.

Examination under anæsthesia showed the uterus as large as a three-months' pregnancy. On curettage the cavity of the uterus was found comparatively clean; curettage and irrigation showed us evidence of perforation, and I concluded that the Doctor was mistaken in his diagnosis, but, on exploration with the uterine sound, there seemed to be no resistance to its insertion in the region of the right horn of the uterus. Care was taken not to push it in far, and I also felt certain that the uterine body had been perforated.

An exploratory section was now made through the posterior fornix and much to my surprise the uterus was perfectly free from adhesions and its surface smooth as far as it could be palpated. The ovaries and tubes were free from disease, except that the right tube seemed somewhat enlarged, but not sufficiently to indicate any serious condition.

The vaginal opening was now closed by sutures. The uterine sound was again passed into the uterus to determine how we had been deceived in concluding that the uterus was perforated, and by directing it to the right horn of the uterus it entered its entire length without meeting any resistance. Digital exploration of the uterine cavity showed it to be free from perforation and detected the dilated opening into the Fallopian tube.

As there were not important complications present the operation was completed by a trachelorrhaphy and perinæorrhaphy for extensive lacerations. The operation was made ten days ago and the patient is making an uninterrupted recovery.

DISCUSSION.

Dr. M. L. HARRIS: I wish to say a word or two in connection with Dr. Watkins' paper with reference to uniformity in anatomical nomenclature. Much confusion often arises from the improper use of terms with regard to the relations of parts. For instance, Dr. Watkins says that tubal pregnancy in the proximal end of the tube usually terminates in uterine abortion. Embryologically and anatomically, the proximal is the fimbriated end, and not the uterine end, and much confusion may

result from the improper use of those terms. The proximal end of the tube should refer to the fimbriated end, and the distal end to the uterine end. Dr. Watkins has reversed those terms, and in that way may cause confusion. He does not express what he means, because tubal pregnancy of the proximal end would not result in uterine abortion.

Dr. NICHOLAS SENN: I wish to relate briefly a case of aborted tubal pregnancy which came under my observation two or three weeks ago. The patient was a woman, thirty-five years of age, the mother of one child, five or six years old. About three months before I saw her she missed one menstruation. Two weeks later she was taken with menorrhagia, and this continued until the time she was admitted into the St. Joseph's Hospital. The case was a rather difficult one from a diagnostic standpoint, because clinical history dated back to some tubal trouble on the left side, which was said to have existed for a number of years. I found the uterus only slightly enlarged, somewhat oedematous, the os quite patulous, and a swelling about the size of an ordinary orange behind the left of the uterus, displacing the uterus forward and slightly to the right. This swelling was somewhat tender; on palpation no distinct fluctuation could be felt, and the question arose whether it was a case of uterine or tubal pregnancy with abortion. I could get no distinct history of the expulsion of anything like membranes. The clinical history simply stated that she had been flowing since the time mentioned. Considering the difficulty in the case, I availed myself of the valuable diagnostic services of a member of this Society, who has a great deal of experience in this line—Dr. Dudley, who examined the case with great care and came to a rational conclusion by exclusion. There was no question as to the existence of pregnancy; the only question was whether it was an abortion the result of uterine or tubal pregnancy. Both of us were inclined to believe that the case was one of tubal pregnancy, with probable rupture, because the swelling was not large enough to correspond with the length of time of supposed pregnancy. We decided at the same time to resort to the vaginal route, for the purpose of making an absolute diagnosis, and to make use of the necessary direct therapeutic measures. This was done a few days later. As soon as I opened the cul-de-sac of Douglas a large quantity of fluid blood escaped, and the next thing that presented itself on enlarging the incision was the ruptured tube, which I could bring down into the wound readily, tied it off close to the uterus, and in that way made a radical operation. It is evident the tube had ruptured, probably about six weeks after conception. I was somewhat surprised at the ease with

which I could bring the tube into the wound and perform a radical operation by the vaginal route.

Dr. WATKINS, closing the discussion: Dr. Harris is entirely right regarding the nomenclature from an embryological standpoint. However, the Fallopian tube and ovary are according to modern nomenclature the uterine adnexæ. This makes the uterine end of the tube the proximal half and the outer end the distal half.

Eulogy of Dr. Etheridge.

The meeting was concluded with exercises commemorative of our late lamented Fellow, James H. Etheridge. Fitting eulogies were pronounced by Drs. Senn, Henrotin, Doering, Nelson and Dudley.

Official Transactions.

C. S. BACON, *Editor of Society.*

TRANSACTIONS OF THE PHILADELPHIA OBSTETRICAL SOCIETY.

Stated Meeting, June 1st.

The *President*, CHARLES P. NOBLE, M.D., in the Chair.*Some Remarks upon the Diagnosis of Puerperal Septicæmia.*

BY W. REYNOLDS WILSON, M.D.

(See page 206.)

DISCUSSION.

Dr. GEORGE ERETY SHOEMAKER: The statement is made that an examination of the lochia might exclude septicæmia. It seems to me that a bacteriological examination is sometimes very disappointing, because we do not get in a given case a positive result. I reported to the Gynæcological Section of the College of Physicians a case of criminal abortion very rapidly fatal from a profound toxæmia in which expert examinations made before death of the lochia and after death of the blood of the heart, kidneys, and spleen, showed no streptococcus. Moreover, the only pus about the body was less than a dram, well encapsulated in one non-adherent ovary, and that showed a modified form of colon bacillus, but the fact that I could get no positive bacteriological result from examinations prior to death did not alter the fact that this patient had a fatal puerperal infection.

The question of treatment was not touched upon in the paper, but the Doctor's picture makes it to my mind still more evident that in cases where here is no palpable disease in the tube, uterus, or ovary hysterectomy is not called for and deserves to fall into disrepute.

Dr. KRUSEN: I was very much interested in Dr. Wilson's paper, particularly in regard to the differential diagnosis of septicæmia and typhoid fever. I have had some experience in these cases. Recently I have seen four cases of pregnancy complicated with typhoid fever, in which the difficult point was the diagnosis. In two of the cases typhoid fever had occurred early in pregnancy and in the other two cases typhoid fever occurred in the eighth month of pregnancy and premature

labor was the result. In the first case the child died early after delivery. In the fourth case the patient was admitted to St. Joseph's Hospital, with history of typhoid. During the night the temperature fell to subnormal. When the woman was admitted the os was dilated, the labor-pains ceased, and the foetal heart-beat became weak, and the child was delivered with instruments. The temperature pursued the ordinary course of typhoid. The interesting point about the case was that we had the baby's blood examined ten or eleven days after the delivery, and there was a decided Widal reaction, showing that the infection had passed to the child.

Dr. BOYD: I have enjoyed very much the paper of Dr. Wilson. The subject of puerperal infection and septicæmia is always of interest. In spite of our careful asepsis to-day our patients will become infected. More than that, we become infected ourselves at times, so that we should exercise the greatest charity in the criticism of the work of others.

The only case of elevation of temperature that resembled an infection that we have had in the work of the Medico-Chirurgical Maternity this winter was one which resembled at first a puerperal septicæmia which finally resolved itself into a typhoid-fever infection. The Widal test reacted nicely, and fortunately for the Maternity the patient recovered. There seemed to be no doubt but that the symptoms at first were apparently those of septicæmia, but proved to be those of typhoid fever.

The doctor alluded to the fact that in many cases the diagnosis was an easy one. In a well-marked case I agree with him, but I know of no condition that is more puzzling than that of elevation of temperature during the puerperium.

In regard to the treatment of the disease, by the difficulty of the diagnosis we are reminded of the necessity of making early internal examinations and treated all the cases of doubt as cases of puerperal infection, giving the patient the benefit of the doubt. I agree with the remarks of Dr. Shoemaker in regard to operative interference in cases of puerperal infection. It does not seem to me that operative interference is wise unless we can feel something abnormal, when we should operate for the mass, either an abnormally shaped uterus or a mass to the side or to the back of the uterus. It does not seem to me that hysterectomy is advisable in the early manifestations of puerperal septicæmia.

Dr. LONGAKER: I was unfortunate in not hearing the first part of the paper, and do not know what was said as to the status of the Widal test in differentiating between septicæmia and typhoid fever; but it

occurs to me that as the time during which the Widal reaction persists after the occurrence of typhoid fever is so very indefinite that probably it would not be a very reliable differential test. I believe the Widal reaction may persist for months and even for years after an attack of typhoid fever. It also occurs to me that one of the reasons for making cultures of the lochia is as a matter of reassurance; not finding streptococci we would feel less anxious about the case. The absence of the Widal reaction would exclude typhoid; its presence would not necessarily mean that the illness was typhoid. It might point to a typhoid which had occurred at a more or less remote date, and in this case it would not exclude septicæmia.

Dr. JOHN C. DACOSTA: I was glad to hear Dr. Wilson's remarks with reference to cultures, and have myself used Dr. Reynold's suggestion within a week in a case following abortion. The method as he directed is one which can only be carried out satisfactorily in a hospital with trained assistants and with special means of sterilization. In the case I mention the secretions from uterus were obtained in a much simpler manner. The vagina was douched, a test-tube and piece of plain glass-tubing, sterilized by boiling, an ordinary speculum used, and the secretions of uterus secured without difficulty. As no streptococci were found, quinia given in large doses cleared up the case in two days.

In regard to the operation of hysterectomy for septicæmia, I can endorse Dr. Shoemaker's view; septicæmia is very different from sapræmia; in septicæmia you have a blood-poison which pervades the whole body. In sapræmia you have a local infection.

Dr. FISHER: There are two points in connection with the diagnosis of septicæmia which have always seemed important to me: the environment of the patient, and the habits of the physician in attendance. Since the first of this year I have seen more cases of septicæmia than for two years previously. There has not been a week in which I have not seen one case, and sometimes two, and most of them have occurred in the practice of certain physicians. I always make it a practice to ask for a nail-brush and have yet to find one where there is a case of septicæmia. Most of the cases have been in certain sections of the city. It would seem that some physicians have cases of septicæmia on hand all the time. Sometime ago I was called to see a case in the southern portion of the city of supposed septicæmia; the woman had been attended by a midwife; her temperature was 104. She had had a chill previous to delivery, epistaxis, and diarrhœa. Under the Widal test the blood showed the characteristic reaction. This might easily have

been mistaken for a case of septicæmia. I can well understand how septicæmia could be mistaken for typhoid fever, owing to the obscurity of symptoms in individual cases, especially in the absence of physical signs. In very many cases of septicæmia we find there is no discharge, and even no arrest of involution, while the symptoms alone may be misleading. In such instances the Widal test and the microscope become essential factors in making a proper diagnosis.

Dr. WILSON: I have only one word to say in reference to the collection of the lochia. The words I used were exactly those of Dr. Williams. If this method is pursued the dangers of carrying extraneous bacteria into the uterus are largely obviated, and it was just that point which led Dr. Williams to carry out such particular measures in his investigation of the methods of testing the vaginal discharge of pregnant women. His experiments were pursued at the time of those of Menge, who found that the upper zone of the vagina did contain germs. Menge in his investigations used the speculum and the supposition was that it had carried the infecting elements from the region of the vulva within the vagina.

Clinical Report of Nephrectomy for Adeno-Carcinoma of the Kidney.

Dr. CHARLES P. NOBLE: I have been interested for some time in the question of nephrectomy, but heretofore have had no occasion to operate for malignant tumor of the kidney. A week ago I removed a kidney from which the drawing shown was taken, and which undoubtedly contains a malignant tumor, probably an adenoma-carcinoma. The microscopic diagnosis is not yet made. I report the case in order to make some remarks upon the diagnosis of renal disease from the standpoint of nephrectomy.

The patient was Mrs. H., widow, aged sixty-one; the mother of five children, and had had no miscarriages. She had had good general health until about eighteen months ago. In the summer of '97 she had some vague pains in the back, which was the first indication that she was not as well as formerly. In August, 1898, she noticed blood in the urine. The first attack of hæmaturia lasted four days. It disappeared for six weeks and reappeared and continued almost constantly until the present unless controlled by drugs. During this time she had had three attacks of pretty violent pain in the right side of the abdomen accompanied by nausea and vomiting. The pain was sudden and intense and was accompanied by faintness. Her family physician, Dr. Edwards of Williamstown, N. J., was under the impression that she

had passed a stone with these attacks. With this history she came under my care. I found that she was a well-preserved woman for her age, but was anæmic and was not as stout as she was some years before; there was evidence of partial emaciation. On careful examination there was nothing to be felt in the kidney region, and the kidney was normal in shape. I found the bladder, upon examination with the cystoscope, perfectly healthy. The urine was intensely bloody, and with a perfectly normal bladder, it was clear that the blood came from the kidneys. On catheterization the blood was found to come from the right kidney. With this history we, of course, thought the cause of the hæmaturia was stone, and so my advice to the patient was that she have an exploratory incision made. Two weeks ago to-day I cut down upon the kidney through a lumbar incision. There was evidence of a diseased kidney, but on palpation there was found no evidence of stone. The kidney was incised, and there was found this tumor, which filled the upper half of the kidney, and there was a little process which extended up one of the urinary colices in the lower half of the kidney. When I first delivered the kidney there was apparently an enormous vein running down into the pelvis, but this proved to be the ureter distended with blood. The operation presented little of note. The peritonæum seemed more adherent than usual and in separating it, it was torn, but was closed up and gave no trouble. There is every reason to suppose that the patient will go on to perfect recovery. The prognosis I think is good because the cancer had existed only for about a year and a half and it is well encapsulated, well surrounded by healthy kidney, so there is no reason to believe there is secondary deposit.

I think this case is an excellent illustration of the point I particularly wish to speak of—the importance of the employment of modern methods of diagnosis. The patient had been treated by an intelligent physician in the old-fashioned way, and no definite diagnosis could be arrived at because definite diagnostic measures were not used. Whether the blood came from an ulcerated bladder, from one kidney, or from both kidneys was an open question. By cystoscopy and catheterization of the uterus the diagnosis was as simple as that of any condition on the outside of the body. That, too, is my experience with the various other conditions of the kidney for which I have been called upon to do nephrectomy. There has been no difficulty in showing the location of the disease, and that you had the indication to cut down upon the kidney, and this is the point which I wish especially to emphasize. Of course, it is true that in stone cases since we have the X-rays the diagnosis can be made by this means. In suspicious cases Dr. Leonard

has been able to locate the stone so accurately as compared with the position of the various vertebræ that it has been of service to the surgeon in operating to find the stone. If the stone was opposite a certain vertebræ it was necessary simply to find that point in the kidney which was opposite the indicated bone and the position of the stone was at once manifest. Aside from stone cases the X-rays are valueless in making a diagnosis of renal disease. Cystoscopic examination and catheterization are applicable to all these cases, and I think are of the greatest service in diagnosis.

DISCUSSION.

Dr. G. E. SHOEMAKER: I wish to commend what Dr. Noble has just said about the importance of direct examination of the bladder for determining the origin of renal and bladder troubles. I have under my care at present two cases of bladder trouble, and have just discharged another one cured in which this was clearly shown. In one of them a cystitis was found to be due to papiloma with an old purulent infection. In another case it was shown that the hæmorrhage had come from the bladder and not from the kidney. In still another case the hæmorrhage and pus were shown to come from ulceration of the bladder. All the cases had been treated for a long time without definite results by general measures. Direct treatment, however, has cured two and is curing the third.

Dr. NOBLE: The only thing that I have to add is with reference to the remark of Dr. Shoemaker's, that doubtful diagnoses are always cleared up at once by the use of the cystoscope. Whether the urinary secretion shows pus or blood, cystoscopic examination will disclose an ulcer or papilloma or well-marked patches of inflammation in the bladder, which clears up the diagnosis at once. I have recently had two cases of marked hæmaturia where cystoscopic examination showed that in each case the hæmorrhage was due to an ulcer. Both cases were old ladies where the symptoms would point to cancer, but in both cystoscopy showed merely ulceration.

- Report of:* 1. *Suppurating Hæmatocoele from Extra-Uterine Pregnancy.*
2. *Suppurating Dermoid complicating Infection after Abortion.*
3. *Post-Operative Typhoid Fever.*

Dr. GEORGE ERETY SHOEMAKER: There are some men who feel that blood from ruptured extra-uterine pregnancy may be under favorable

conditions absorbed, and that possibly operation is not necessary; but an instance of my own, about two weeks ago, illustrates the danger of that view. A woman was brought to the Methodist Hospital with history of uterine hæmorrhage for seven weeks with more or less pain becoming severe at times. No collapse. No menses had been missed. There was abundant brownish vaginal discharge. There had been active peritonitis for one week, with temperature of $102-3^{\circ}$ and intense pain with vomiting. There was high pulse, marked sweating, and upon examination a large mass was presented in the abdomen thoroughly walled in, extending up to the umbilicus, and obscurely fluctuating in places. This mass had suddenly appeared about a week previously. I felt confident that the case was one of extra-uterine pregnancy. On operation through the abdomen I found a large collection of degenerating blood thoroughly walled in by intestines. The peritonitis was so extreme that I was twenty minutes finding which was uterus and tubes and which was intestine, and what was plastic exudate. There were two foci of pus. The main blood-mass was found between the dilated tube and sigmoid flexure on the left side. The placenta lay in the left tube two inches from cornu. The left tube had ruptured, but had probably been previously diseased, as several inches of its contorted length was as large as small intestine. Patient is recovering with gauze drainage.

In another case a woman came from New Jersey with post-puerperal infection, having aborted at four months, seven weeks before. The abdomen was tensely distended, temperature 103° ; sweating, rapid loss of flesh. The distended intestines were tightly bound down over the whole front of the abdomen, with evidence of fluid behind. There was no place to incise in front without having gone through a great area filled by adherent tense intestine. She had had one week of intestinal obstruction, which was temporarily relieved. I decided to drain her first through the vagina. A quart of fæcal-smelling pus came from the first incision into Douglas's sac, but did not empty a sac which was above the uterus. On making the second opening from the cul-de-sac into this collection, it proved to be a suppurating dermoid cyst of the left ovary. Fortunately, the amount of hair was small and I was able to empty the sac completely.

The patient has made a nice operation recovery under vaginal drainage, but no doubt will ultimately require the removal of the dermoid sac.

I do not wish to indicate that this is a good way to attack tumor cases if the abdominal route can be used. But here was the cul-de-sac full of pus from the puerperal sepsis; had I gone in upon the tumor

from above, I should have flooded the abdominal cavity with a large amount of foul pus from the collection, outside of the dermoid. Even under ether the presence of the dermoid as a separate tumor could not be recognized, owing to the excessive distention of adherent intestine over the entire abdomen.

I also wish to refer to a case recently discharged from the hospital in connection with the subject of typhoid fever following operations. There was a double-heart lesion and the patient was exceedingly anæmic. She had been for some time in the medical wards, but having lacerations of the pelvic floor and symptoms of chronic appendicitis, I somewhat reluctantly determined to operate upon her before she left the hospital. She made a normal and aseptic recovery as far as the wound was concerned, but developed marked fever in the third and fourth weeks after operation. I have always ridiculed the diagnosis of typhoid fever following operations or confinement, and have made remarks about the suspicious nature of such conditions, as they are nearly always septic. This case, however, seemed to me to have typhoid for the following reasons: It occurred during the epidemic of typhoid fever in this city, and the patient was drinking unboiled water. She had had a wound which healed at once and did not show any indication of infection. The blood examination showed the condition of leucocytes to be inconsistent with sepsis, but consistent with typhoid fever. The blood examination, made by Dr. D. E. Kercher, is as follows:

Leucocyte count, 5185; polymorphonuclear, 86 per cent.; small lymphocytes, 10 per cent.; large mononuclear, 3 per cent.; eosinophiles, 1 per cent. No nucleate red blood-corpuscles. Some alteration in size of red blood-cells.

Two specimens of blood sent to the City Hall under different names and at intervals of several days in both instances showed positive Widal reaction. She had violent and repeated epistaxis in the second and third weeks after my operation. She had diarrhœa, which was not readily controlled by simple means, and a temperature range which, while atypical, was not unlike that of mild typhoid. There were three suspicious spots. She made a good recovery and has been discharged well.

Dr. L. J. HAMMOND: I desire to refer to the last case mentioned by Dr. Shoemaker in regard to the epistaxis being positive evidence of typhoid fever. Certainly, this is one of the most conspicuous symptoms in that fever, but he tells us that the case had a marked heart lesion, such cases being placed on diet and rest treatment have their blood-pressure reduced and during convalescence the blood-pressure being increased as

a result of increase in food and exercise you would most likely in those marked heart-lesions have epistaxis develop, so I simply mention this in order to prevent too much stress being placed on epistaxis as a symptom *per se* in the case just cited.

The second case shows that the pathologic condition was unquestionably present prior to the labor, and illustrates the importance of examining all cases of pregnancy that present themselves before labor in order to determine not only the position of the child, condition of kidneys, but also the condition of the ovaries and tubes, in order that any liable trouble might be anticipated in the early treatment.

Dr. NOBLE: I was glad to hear Dr. Shoemaker speak about the ectopic case, and I was trying to remember the number of cases that I had seen in which the blood from an extra-uterine pregnancy had suppurated. Without having the records before me I can remember five in which I have been obliged to operate in which suppuration had taken place in the hæmatocele; in other words, at least 10 per cent. of the cases of extra-uterine pregnancy that I have seen. The likelihood of suppuration is very considerable, and if we would add this fact to the fact that we never know when the recurrent hæmorrhages will take place it seems to me that it makes the teaching that many of these cases will recover most unsafe. On the other hand I can say that I have never operated on such a case when the blood was localized in the pelvis that did not recover. When we contrast this result with the possibility of recurrent hæmorrhage and the likelihood of suppuration the indication for operation is most urgent.

It is my invariable rule in ectopic pregnancy never to leave a patient after making the diagnosis until I have operated, if she is willing. That plan was followed here, the operation being performed as soon as preparations could be made after I first saw the woman.

Memoir of Dr. Robert P. Harris.

By CHARLES P. NOBLE, M.D.

(See page 227.)

Official Transactions.

FRANK W. TALLEY, *Secretary.*

ABSTRACTS.

This Department is in Charge of the Following Staff of Sub-Editors:

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OBSTETRICS.

UNITED STATES.

Pericystitis in the Puerperium.

GUSTAV KOLISCHER (*The Chicago Med. Record*, May, 1899) calls attention to a disease occurring in the late puerperium, of great importance, yet rarely or not at all recognized. As far as the writer knows it has not been mentioned in medical literature.

There appears sometimes in the late puerperium an inflammatory infarction of the perivesicular cellular tissue, especially anterior to the bladder, which may assume such dimensions that the whole bladder, to the touch, seems to be changed into a disc-shaped tumor larger than a man's hand.

The symptoms are about as follows: After the patient has had to be catheterized for some time after confinement, or where there has been straining in passing the urine, with slight tenderness of the lower abdomen, a sudden attack of fever comes on, sometimes preceded by a chill. Intra-uterine trouble is excluded as the lochia is normal. Bimanual examination reveals the anterior half of the pelvis filled with a tumor from which the uterus cannot be isolated. The tumor will be found to be especially tender on its anterior side. The condition of pain and fever may drag on for months, with no point of softening in the tumor to warrant surgical interference. In the cases observed neither suppuration, phlebothrombosis, nor other serious sequelæ have appeared. After a long and exhaustive course spontaneous recovery takes place. Pointed distortions of the bladder often remain, and the condition is usually confounded with parametritis. Two laparotomies, supposedly for parametritis, were found to be typical cases of pericystitis. The bladder, with its inflamed covering, protruded into the abdominal cavity, the peritonæum immovable on its anterior side, and covered with petechiæ. The free and movable uterus was behind the bladder tumor.

The differential diagnosis must be established by bimanual exam-

ination, and by the internal examination of the bladder. Although it is difficult to differentiate the uterus from the tumor, it may be possible sometimes by rectal examination. The parametria are soft and tender, and the uterus is movable. It is often possible to palpate the uterus, owing to the resistance which the hard tumor causes; this cannot be done in parametritis. Edema often occurs between the clitoris and the tuberculum urethral, also on the mons veneris.

The capacity of the bladder is not much changed, but the sound shows the cavity elongated. The tumor grows no smaller by emptying the bladder with a catheter, showing that the bladder is not distended, but that the changes are in the walls and surrounding tissues. After spontaneous micturition there is always residual urine, as the bladder cannot contract completely. On injecting water into the bladder a permanent resistance is felt after a little, caused by the rigidity of the vesical walls.

In cystoscopic examination it is difficult to erect the beak of the cystoscope, showing the anteroposterior diameter of the bladder to be impaired. The trigonum shows normal color and injection. The anterior wall of the bladder shows edema, and its mucous membrane is covered with striped petechiæ.

Etiology.—In every case there has been a history of protracted labor with hard pains, or a difficult forceps operation, or a neglect to empty the bladder in proper time. It, therefore, seems probable that in these cases a traumatic hæmorrhage into the perivesicular cellular tissue has taken place, giving rise to inflammatory infarction.

Treatment.—Hot irrigation of the bladder; hot poultices over the lower abdomen, and ichthyol suppositories have proved helpful. Aucte cases may demand surgical treatment.

An Unusual Case.

M. R. ADAMS (*North Carolina Med. Jour.*, May 5, 1899) reports a case which he saw in consultation with Dr. W. J. Hill, to whom he is indebted for the previous history of the case. The patient, aged 47, and the mother of five children, had uniformly enjoyed good health. She ceased to menstruate early in the winter of 1891-'92, and as there was progressive enlargement of the abdomen, together with other symptoms of pregnancy, foetal movements, etc., she considered herself pregnant. On August 17, 1892, labor pains began, and a midwife was summoned. After twelve hours, with no progress toward delivery, a doctor was called; he found no dilatation of the os, and left her in the

care of the midwife, thinking that labor would follow later. On October 7th the doctor was called again, and found the signs of advanced pregnancy and beginning labor, but, as before, no change in the cervix had occurred. As the patient was in good health and the pains ceased, it was decided to await developments. Soon after this, every month or six weeks, there was a discharge from the womb, which the patient regarded as menstruation. She resumed her domestic duties, and felt well until November, 1898, when a persistent fever developed, with anorexia, nausea, vomiting, and diarrhoea. Her pulse was rapid, and the temperature range that of sepsis. There was no albumin in the urine. The patient became terribly weak, and emaciated to a mere skeleton. On consultation a laparotomy was decided upon, and performed on January 24, 1899. Extensive adhesions were found and broken up, and an incision four inches long made in the uterus, which was found to be filled with a quart or more of a green, gangrenous fluid, in which were the disarticulated bones of a fully developed child. The interior of the womb was thoroughly irrigated and the wound closed. The abdomen was flushed with a hot saline solution, and the incision closed without drainage. The patient bore the operation fairly well, but died thirty hours afterward.

Adherent Placenta.

CHAS. B. REED (*The Jour. of the Amer. Med. Ass.*, May 6, 1899), in a series of observations on the third stage of labor, finds that the time required for the spontaneous delivery of the placenta varies from a few minutes to thirty-six hours. But where the delivery is delayed more than two hours, some pathologic condition must be present.

Owing to the immaturity of the placenta, and the absence of the usual degeneration, adherent placenta occurs more often in abortions than at term. This condition is dangerous to the mother always, sepsis or hæmorrhage being the cause of death.

The causes for this condition may be considered under three heads: (1) Causes attributed to the placenta. Inflammation of the placenta is the most common. This may arise in the connective tissue or in the arteries; and the placenta may become either prematurely detached, owing to fatty changes, or closely adherent to the uterine walls. Traumatism may produce this inflammation. Rheumatism and syphilis are also given as causes. In *placenta succenturiata* the main portion of the placenta is often delivered, while the smaller portion remains adherent. *Placenta previa* is the most common placental anomaly in connec-

tion with adherent placenta, Chazan's explanation being that the placental attachment in these cases is removed from the point of greatest contraction of the uterus, and less power can be applied to produce its detachment. Abnormally thin placenta are more apt to be adherent.

2. Causes attributed to the uterus.

A previous endometritis may furnish the starting point of placental inflammation. Atony uteri affecting the whole uterus and manifest during labor, or affecting only the placental site, is the most important cause. This condition is most common in poorly nourished patients, but may occur in vigorous women, so that it seems necessary to consider Rokitsansky's theory that nervous depression may be a cause. "Paralysis of the placental site" might explain the frequent association of adherent placenta and *inversio uteri*.

3. Causes attributed to the utero placental connection. Winckel mentions extravasations of blood into the decidua serotina, and thence into the villous spaces, or they may arise from the vessels of the villi, becoming changed into firmer connective tissue. Godson, in 1896, from microscopic examination of retained placenta confirmed this view. Neumann's exhaustive investigation with microscopic data shows that the adhesions are commonly due to a deposit of fibrin originating in the decidua, and involving the opposing surfaces of the placenta and the uterus, the cement substance being a tough fibrous material, difficult to separate from the uterine wall.

Consequences of Retention.—Where the placenta is partly detached hæmorrhages occur, demanding the removal of the placenta. Where there is complete adherence the retention may last for months. Gallant reports a case where the placenta was retained for a year, and a second pregnancy with placenta previa occurred. Aside from the danger from hæmorrhage and sepsis, the retained placenta or fragment thereof may give rise to polypi, hydatiform moles, or even malignant neoplasms.

Diagnosis.—The history of the case will usually give the fact when the entire placenta is retained, and the enlargement of the uterus, as well as its soft, doughy feeling, is a guide. But where a history cannot be obtained, and the cord has been torn off by traction, a thorough exploration of the uterine cavity with the finger is demanded. In cases of placenta succenturiata confusion may arise from the detachment and delivery of the major portion while the smaller fragment remains in utero. Indications for removal after abortion are any suspicious odor or discharge. After labor the removal is indicated whenever the usual methods have failed after twenty-four hours, or sooner, if any unpleasant symptoms develop. Thorough antiseptic preparation of the ex-

ternal genitals, vagina, and the operators' hands must be made. Then, under deep anæsthesia, the hand is doubled up into a cone shape and introduced into the placental site. Then the fingers are inserted between the placenta and uterus, and the former stripped from its base, while the external hand secures uterine contraction by massaging the uterus. Any remaining fragments may be removed by a curette, or, better, the uterus may be tamponed with iodoform for forty-eight hours, when the fragments will be easily removed by the finger. In collapse from hæmorrhage one to three quarts of normal salt solution should be slowly injected under the breasts. Elevation of temperature can be controlled by diffusive stimulants and quinine.

PÆDIATRICS.

UNITED STATES.

The Feeding of Run-about Children.

CHARLES GILMORE KERLEY (*Practical Med.*, May, 1899) suggests the following dietary for the use of children from 12 to 15 months of age. The change from milk is to be gradually instituted, one article after another being introduced:

7 A. M.—Oatmeal, barley, wheat jelly; one to two tablespoonfuls in eight ounces of milk. Orange juice.

11 A. M.—Scraped rare beef, one to three teaspoonfuls, or soft-boiled egg. Zweiback. Eight ounces of milk.

3 P. M.—Broth, beef, chicken, mutton, with salt bread broken in. Drink of milk, zweiback.

6 P. M.—Two tablespoonfuls cereal jelly in eight ounces of milk. Zweiback.

9.30 P. M.—Tablespoonful cereal jelly in eight ounces of milk.

For children from 15 to 18 months old the following is recommended:

7 A. M.—Oatmeal, barley, wheat jelly; one to two tablespoonfuls in eight or ten ounces of milk. Juice of one orange.

11 A. M.—Soft-boiled egg mixed with dried bread crumbs, or tablespoonful scraped rare beef mixed with dried bread crumbs, moistened with beef-juice. Drink of milk. Zweiback or bran biscuit.

3 P. M.—Broth, mutton, chicken, beef, with stale bread broken in. Custard, cornstarch, plain rice pudding. Stewed prunes, baked apple, apple sauce.

6 P. M.—Two to three tablespoonfuls cereal jelly with eight to ten ounces of milk.

From 18 to 24 months the following:

7 A. M.—Soft-boiled egg, heart of lamb chop. Farina, hominy, oatmeal with half milk, half cream. Drink of milk. Bran biscuit with butter or stale bread and butter. Juice of one orange.

11 A. M.—Rare steak or rare roast beef cut fine. Spinach, asparagus tops, strained stewed tomatoes, mashed cauliflower Baked apple, apple sauce. Drink of milk, stale bread and butter. (After twenty-first month baked potato and well-cooked, finely cut string beans may be given.)

3 P. M.—Broth, chicken, beef, mutton with stale bread broken in. Custard, cornstarch, calve's-foot jelly, plain rice pudding. Stewed prunes. Drink of milk. Bran biscuit with butter or stale bread and butter.

6 P. M.—Rice and milk, hominy and milk, farina and milk, stale bread and milk.

Congenital Deformity due to Malposition of the Scapula.

ALBERT H. FREIBERG (*Ann. of Surg.*, May, 1899) reports the case of a child, four and a half years old, in all respects healthy and normal save for the appearance of the spine and region of the left shoulder. The history of the labor showed no cause for the condition. Examination revealed a left scapula less prominent than normal in its lower two-thirds; between the root of the neck and the left shoulder was a marked prominence, visible even from the front; palpation showed the body of the left scapula much smaller than that of the right, and that the prominence above was the superior angle of the bone, immediately beneath which the spine could be felt. Length from superior to inferior angle of the bone was $4\frac{1}{2}$ centimeters as against 6 in the right scapula. The long axis of the bone seemed tilted so as to approximate the inferior angle to the spinal column; its superior angle was about 5

centimeters higher than that of the right. The coracoid process could be but faintly distinguished. The mobility of the shoulder was very free except that the arm could not be raised more than 100° from the vertical. There was right dorso-convex scoliosis with slight compensatory lumbar curve. There was marked prominence of the chest corresponding to the left mammilla, with decided flatness at the same place on the opposite side. The left leg was slightly shorter and considerably less developed than the right, and the left foot was also shorter than the right.

The most likely explanation seems to be that of Sprengel, who assumes that the deformity is due to an intra-uterine malposition in which the arm lies behind the child with its dorsal surface in contact with the back of the child, the dorsal surface of the hand being applied to the iliac crest of the opposite side; such a position, he thinks, might be produced by the pressure of the uterine wall when the liquor amnii is deficient. In imitating this position artificially the position of the scapula is seen to be much the same as in these cases.

Mechanical treatment is useless; and surgical treatment, unless the movement of the arm be considerably interfered with, seems hardly necessary. Sands in one case divided the trapezius and levator muscles without benefit; he then removed that portion of the bone above the spine, and secured a marked improvement. Similarly Hoffa has obtained satisfactory results by separating the muscular attachments at the superior angle and removing the bony projection.

GREAT BRITAIN.

A Case of General Paralysis of the Insane in a Child, in Which a Gall-Stone was found after Death.

JOHN THOMSON and D. A. WELSH (*British Med. Jour.*, April 1, 1899) report the following case: The child, a girl, was one of seven children, of whom four others showed distinct signs of congenital syphilis. When nine and a half years old she was treated for severe headaches, which she had had for five years, with iodide of potassium, and was much improved; she was also found at that time to have patches of choroidal atrophy. Otherwise she appeared normal till she was nearly eleven years old, when she was noticed to be not improving at school and to be becoming stupid and irritable. Death occurred at the end of her seventeenth year. At the age of twelve she had a fit, in which there

was opisthotonus and extreme pronation of the right forearm, which remained weak for some days; after the attack she spoke indistinctly and complained of headache. These fits continued at intervals of ten or twelve weeks, becoming more frequent, but rather less severe, after the fifteenth year. The tongue was tremulous after the first fit, and remained so; the hands soon became unsteady, and walking gradually became more and more difficult, till, when sixteen and a half, she had to be carried about. Her speech was characteristic when twelve and a half years old, and grew worse, till at her death it was difficult to understand her. The knee-jerks were greatly exaggerated when she was thirteen, but ankle-clonus was not obtainable till within a year of her death; for two years previous to that event she suffered from incontinence of urine and faeces. Between eleven and fourteen she became unnaturally fat, but after that time lost flesh steadily till at death she was much emaciated. When eleven and a half she was able to help in the household work, but a year later could do very little, and wished to spend all her time playing with beads. She became very irritable. She retained some faculty of memory till she was thirteen; at about this time she began to have hallucinations of various kinds, but with the later progress of the disease these became less distinct. Six months before death she had a subacute periostitis over the right tibia, which was much relieved by iodide. She died in a state of extreme mental and bodily debility.

Pathological examination showed a thickened dura, adherent to the cranium in places, excess of cerebrospinal fluid at base of brain and in sulci of vertex, an engorged and thickened pia, everywhere adherent to the brain; there were also adhesions between the frontal lobes at the median fissure, and between the tips of the temporo-sphenoidal lobes and the dura. The cerebral convolutions were much atrophied, particularly in the frontal and parietal regions, and the sulci were dilated; on section the cortical gray matter was tough and extremely atrophied, its layers indistinct; the white matter was tough, with irregular patches of congestion; the lateral ventricles were dilated and their ependyma and that of the fourth ventricle showed granulations. Microscopic sections of the cortex showed characteristic changes in the nerve cells, the neuroglia, and the vessels. The greater part of the nerve cells had disappeared, and such as remained were atrophied and degenerating; the neuroglia showed extensive proliferative overgrowth in the cortex, the white matter, and throughout the whole extent of the gray matter, the hypertrophied neuroglia cells occupying the places of the atrophied nerve cells; there were aggre-

gations of leucocytes in the perivascular spaces of the medium-sized intracranial vessels, while the walls of the smaller ones and of the capillaries showed marked hyaline thickening. The spinal dura was thickened, adherent in places, and the pia was also thickened. The thymus persisted as a thin, flattened mass.

Examination of the abdomen revealed a gall-bladder distended with a clear watery fluid, and measuring 5 inches in length and 2 inches in transverse diameter. The cystic duct was dilated and tortuous, and had a single gall stone impacted at its hepatic extremity, measuring $\frac{1}{2}$ by $\frac{3}{8}$ by $\frac{5}{16}$ inches; its center was a bilirubin-chalk stone, with subsequent surrounding deposits of calcium phosphate and traces of cholesterin. The liver showed patches of perihepatitis and some cirrhosis, with fatty degeneration and infiltration of its cells. The spleen showed perisplenitis. The uterus was infantile; the ovaries consisted almost entirely of stroma, containing only degenerated and undeveloped follicles and a few small cysts.

On Certain Variations in the Motor Phenomena of Chorea.

JAMES W. RUSSELL (*Lancet*, April 1, 1899) says that it is usually considered that any purposive movement, as the attempt to write, makes the choreic movements worse. The writer, therefore, thought that specimens of handwriting would furnish a means of estimating and registering the severity and progress of cases of chorea; but the result showed there existed unexpected variations in the power of writing, in many cases without reference to the violence of the choreic movements. The writer has, therefore, divided these cases into five groups. The first group includes those in which the interference with writing corresponds with and depends upon the choreic movements. Many of the movements with the pen are purposeless, and the written word signifies a number of detached motor acts, the ability to write at all depending on the power of more or less inhibiting the movements for a short time; the result varies with the severity of the disease. The second group represents those cases in which a more or less complete control of the movements can be exercised, even though they be of considerable severity. The author's specimens of handwriting from this group present little deviation from the normal. The third group includes cases in which there is none, or the slightest chorea of the right side, but in which the act of writing is greatly interfered with. Here the disorder seems to arise from inability to bring into co-ordination the fine movements of writing, often to combine the onward

movement of the hand with the movements of the fingers. Thus the hand remains in one position on the paper, or in the milder cases the handwriting is characteristically cramped. The fourth class resembles the second in the complete control exercised over the movements; but a marked defect of writing remains, due, apparently, to inability to properly guide the movements of the fingers, though there may have been in the cases noted some additional mental defect. There were only two cases in the fifth group; these were characterized by inability to write at all, though the choreic movements were of very moderate severity; it was probably due mainly to intellectual defect. The power of speech was also almost lost. The question arises whether all these cases were true chorea; the writer is convinced that they were, though he is aware that the power of controlling the movements during voluntary action has been said to be found only in hysterical chorea; he compares the autograph of a case of undoubted hysterical chorea, in which even the slight power of control of the first group is wanting, the individual lines of the letters possessing a jerky irregularity not seen in any of the other specimens.

Three Cases of Cardiac Thrombosis in Diphtheria.

F. J. WOOLLACOTT (*Lancet*, May 6, 1899) remarks that cardiac thrombosis, rare in the course of any disease, is of special interest in diphtheria. The three cases cited were the only instances in over two hundred consecutive post-mortems on diphtheria patients at the Eastern Hospital, though degenerative changes in the heart were frequently found, occasionally dilatation, and often post-mortem clots. Since the introduction of the antitoxin treatment, the mode of death in diphtheria has undergone a change in that a fatal result from the extension of the disease to the air passages and lungs is less frequent, while we now see in the majority of cases a slow heart failure with failing pulse and vomiting; some præcordial or abdominal pain is common, but is very rarely severe. The most striking feature of these cases of cardiac thrombosis, however, is the severity of the pain; in one case it was particularly sudden in onset, and agonizing like an agina; it began only about nine hours before death, so could not have been due to the thrombus (which the autopsy showed to be of longer standing), but probably to distention and dilatation of the heart. In the other two cases the pain was less severe and the cardiac dilatation less marked. The thrombi themselves seemed to cause no symptoms, probably because they were too small or too far from the valves to interfere with them.

Death was not sudden in any of the cases, the heart failure being slow and gradual, though if a large piece of the thrombus got loose it might hamper the valves or block the aorta or pulmonary artery, and cause instant death. In two of the cases infarcts were found; in the other the thrombus had probably not had time to disintegrate sufficiently. In all these cases the diphtheria was of a severe type, probably complicated by secondary infection; the first showing faucial ulceration with beginning adenitis, the second tonsillar ulceration, and the third being complicated by scarlet fever and an abscess of the neck.

The Treatment of Inguinal Hernia in Children.

W. McADAM ECCLES (*Brit. Med. Jour.*, May 13, 1899) believes that many infants with a patent processus vaginalis never become the subjects of hernia, so that we must look beyond this for the exciting causes of that condition; such are cough, constipation, and phimosis if severe enough to cause ballooning of the prepuce with micturition. The writer does not consider any but the most marked phimosis an important factor, since many cases of phimosis do not present herniæ, since herniæ are common in Jewish male children, and since phimosis does not usually offer much obstruction to the flow of urine. On the other hand, he does believe that improper diet is one of the most potent causes, in that it leads to gastro-enteritis, and so to crying, vomiting, diarrhœa, and especially flatulence with greatly increased intra-abdominal pressure.

Treatment divides itself into two classes, non-operative and operative. The first consists of the removal of any exciting cause, reduction of the hernia, and the fitting of some mechanical support. It is of the utmost importance to order the diet carefully and regulate the bowels. Nothing can be expected from circumcision unless the phimosis be extreme. Reduction of the hernia is usually easy. As regards the support, the wool truss exercises little if any pressure over the hernial apertures and may cause excoriation. The spring truss, on the other hand, is very efficient in retaining the viscera and presses directly over the inguinal canal. It, must, however, be well made and of proper size, and should be covered with pure rubber with no seam next the skin. In measuring for it the tape should be carried obliquely round the pelvis, at the base of the sacrum behind, half way between the crest of the ilium and the top of the great trochanter at the side, and above the symphysis pubis in front; for a double truss it is well to add an inch to the measurement thus obtained. The adjustment is of the

greatest importance. In children there is practically no inguinal canal, the deep ring lying almost behind the superficial one, both being above the level of the pubic bone, and so of the symphysis, which in children is considerably higher than it appears to be. A guide to the level required is the curved line known as the fold of Venus; the whole of the pad of the truss must lie above this line; otherwise there will be compression of the soft parts between the pad and the bone, the pressure would induce irritation and excoriation, and the pad would not tend to retain the intestine. Properly placed, however, the pad entirely retains the intestine, and is not easily displaced. The truss must be worn continually, and when its temporary removal is necessary the aperture should be covered by the finger. Descent of the hernia often ceases after a few weeks, but permanent closure of the process can be expected only after some years. Treatment by trusses should be begun at the earliest possible period, when a cure may be confidently predicted; the later treatment is begun the less likely it is to be successful. The truss treatment in female infants is even more likely to succeed than in male children.

Only a small minority of the cases need operation; it may be advised where, the child being properly fed, the hernia is not retained by a suitable truss in irreducible hernia; where the truss has been worn for three years with no apparent cure; where the child is three years old, and has never worn a truss; and in strangulation. It is rare that any of these conditions obtain. In operating the incision need not be more than one and one-half inches long; the aponeurosis of the external oblique is divided, the neck of the sac stripped from the spermatic cord or round ligament up to the parietal peritonæum; the sac then be opened, its contents reduced, and the aperture closed by a continuous suture of fine silk. Nothing more is usually necessary; occasionally if the hernia is old and the parts much stretched it may be wise to approximate the roof of the canal to its floor by one or two sutures. The aponeurosis of the external oblique and the skin are then separately brought together. The patient should be kept in bed ten days; it is not necessary that he should wear a truss unless the parts were previously much dilated.

Remarks on Laryngeal Growths in Young Children.

G. HUNTER MACKENZIE (*Ibid.*, May 20, 1899) says that laryngeal growths in young children may be either congenital or may develop at any time during the first six months without apparent cause, or may be

a sequelæ of the acute infectious diseases. They are marked by a steadily increasing hoarseness, finally followed by respiratory stridor, more marked with crying or struggling. In very young children it is sufficient to make the diagnosis by exclusion, as laryngoscopy is difficult or impossible, and as there is no other condition which gives rise to this persistent and steadily increasing hoarseness; with laryngitis sicca the huskiness varies according as the secretion is got rid of, while ordinary laryngitis is of a transient character.

Surgical treatment only is efficient, not, however, removal of the growths either directly or by thyrotomy; these operations are difficult and dangerous in young children, and the growths have a marked tendency to recur. What was adopted as a palliative treatment has been found to be also curative, namely, tracheotomy. The breathing is thus relieved, and the growths, freed from the irritation of phonation and coughing, gradually lose their vitality and become detached without tendency to recur; six months, sometimes a shorter period, is long enough to allow this to happen. It is well to have the secretion from the windpipe examined for the presence of the growths, particularly when the tube is removed for cleansing. The child finds breathing at first after the permanent removal of the tube somewhat difficult, and it may be necessary to replace it once or twice for short periods. Some huskiness of the voice may remain, but passes away, usually completely, in time.

CANADA.

Hæmorrhoids in Children.

EDWARD W. ARCHIBALD (*Montreal Med. Jour.*, February, 1899) remarks that it is not many years ago that the occurrence of hæmorrhoids in children was denied by a number of competent observers, and even in recent literature the possibility receives but a passing notice. The writer records the case of a girl, eight years old, who for five years had passed small quantities of blood on defæcation, occasionally also in the intervals; frequently there was accompanying pain. There had been various irregular remissions of the bleeding, at one time for about a year. Examination showed small, but distinct, venous piles surrounding the lumen of the bowel within the anus; they were not inflamed, but bled easily; the blood was usually dark and fluid, but sometimes bright red; the largest quantity observed was a half-ounce. Nothing abnormal besides the piles was found, but there was a history of a fall of some twenty feet occurring about a week before the first

attack of bleeding. There was some history of constipation, and the treatment consisted merely in securing a soft stool daily. The child remained in hospital seven weeks, during the last three of which she had no bleeding; and for about a year since she has had only two slight recurrences of bleeding.

Twins, Each with Syringo-Myelocoele.

H. A. WRIGHT (*Canad. Pract. and Rev.*, April, 1899) reports a case of twins, both breech presentations, and each having separate membranes and placenta. Both were males, and both presented spina bifida in the lower dorsal regions, and hydrocephalus. The first-born weighed five pounds, and died in ten days, showing no advancement; the second weighed five and a half pounds, gained markedly, but died at the end of three months and nineteen days. In both the hydrocephalus and dorsal tumors increased with rapidity, and in both death was due to rupture of the sac. Both cases had convulsive movements and paralysis of the lower extremities, but natural action of the bladder and bowels. Operation was thought hopeless, and no autopsies were made. The twins were the result of the mother's sixth confinement, her other labors having been normal, with the exception of one child still-born at term.

AUSTRALASIA.

The Treatment of Severe Hypospadias, with Notes of a Case.

W. MOORE (*Intercol. Med. Jour. of Australasia*, March 20, 1899) operated as follows in a case of hypospadias of the peno-scrotal variety, with marked curving of the penis: The urethra was opened in the perinæum; the soft parts holding the penis down were then divided so that the penis could rest on the abdomen, where it was attached by horsehair sutures through the glans and skin of the abdomen. Thus the transverse incision became longitudinal, and in the mid-line was extended backward to the urethral opening and forward to the point of the glans. The skin on either side of the raw surface thus left was dissected back for half an inch on either side and sutured to the abdominal wall, when Thiersch grafts were placed upon the whole raw surface. A soft rubber catheter was passed into the bladder through the perinæal opening and retained. Three weeks later the edges of the flaps were freshened and accurately sutured, the redundant skin about the glans being drawn forward and sutured to complete the anterior

part of the canal. Two fistulous openings remained, however, also the opening formed at the anterior part of the glans failed, leaving the opening at the posterior part. Two secondary operations were done later, at the second of which the fistulæ were successfully closed. A No. 8 catheter can now be easily passed.

The writer is not aware that this method of treatment has been described and believes that as a rule perfect success would be attainable in the first place and in about a month's time. He thinks that the complete freeing of the penis, followed by its attachment to the abdomen, is much more likely to get rid of the abnormal curve if the raw surface be grafted instead of being left to granulate and therefore contract. Also the thin layer of skin obtained by the Thiersch method makes a better substitute for mucous membrane than the scar tissue or normal skin hitherto employed, and is less likely to contract. In addition, the time and trouble of treatment should be greatly lessened.

GYNÆCOLOGY.

GREAT BRITAIN.

Disappearance of Recurrent Mammary Cancer after Oöphorectomy and Treatment by Thyroid Extract.

G. ERNEST HERMAN (*The Lancet*, April 22, 1899) in the *Lancet* for June 11, 1898, reported a case of the above nature, and can now add to that report the fact that the patient has continued in good health since. A second case has since been similarly treated, of which a history is appended. In 1894, the patient then being 45 years old, a lump was noticed in her right breast, and in June, 1895, the right breast with the fascia covering the pectoral muscle, and four enlarged axillary glands, were removed. The growth proved to be carcinoma. In October of the same year three nodules situated just beneath the scar, and two others above the center of the scar, together with some lumps in the axilla, were removed. In November, 1897, a lump was noticed in the left breast. On admission to the London Hospital the following July there

was an ulcerating surface over the third and fourth ribs on the left side, depressed at its center with thickened margins. In the right axilla was a depressed cicatrix, separate from the ulceration and without sign of recurrence of cancer. In the left breast was a lump of stony hardness, measuring three and a half by two inches. The left nipple was drawn in, and there were hard, enlarged glands in the axilla.

The day following her admission to the hospital both ovaries were removed, and as soon as vomiting ceased after the anæsthetic, the patient was put upon thyroid extract, 5 grains three times daily. In September the ulcer had completely healed, and the left breast was much softer, and the patient had gained twelve pounds in weight. One month later there was no distinct lump in the left breast, and no enlarged glands in the axilla.

When seen March 28, 1899, the left breast was apparently healthy, although the nipple was retracted. The patient's health was good, and she had gained much in weight. She has continued the use of the thyroid extract.

The relative importance of the two parts of the treatment, oöphorectomy and thyroid extract, must be alluded to. Stanley Boyd has collected fifteen cases treated by oöphorectomy alone, but in only four was there "relief worth obtaining." He also publishes reports of five cases in which thyroid extract was given. In one case it was only given for a month; in another where recurrence of the growth had occurred *after* oöphorectomy, and in two out of the other three cases some benefit seemed to follow. Four cases have now been published where the combined treatments were used, and in three of these the cancer disappeared. Of course, it is impossible to say that these patients are "cured" until they have been watched throughout the remainder of their lives. But if that condition of the organism can be maintained which led to the disappearance of the cancer, it is reasonable to expect that this condition will be incompatible with return of cancerous growths. They cannot develop new ovaries, and are instructed to continue the use of the thyroid extract as long as they live.

On the Surgical Treatment of Uterine Cancer and Its Recurrences.

THEODOR LANDAU (*Brit. Med. Jour.*, May 27, 1899) says that of all methods of treatment for carcinoma the surgical still yields the best results; therefore it should be our aim to make as early a diagnosis as possible in order to render this treatment efficient. Each organ has, so to speak, its cancer characteristic, both in histological structure and tendency

to metastasis; in carcinoma of the body of the uterus the disease is at first confined to the womb, then involves the pelvic connective tissue and the lymph vessels, then spreads to the neighboring organs; but affects the lymphatic glands and distant organs only very late; these facts are shown by post-mortem findings, and also clinically, most inoperable cases being such, not on account of metastasis in distant organs, but on account of the danger of injury to the bladder, uterus, or intestine. The same thing is demonstrated by the tendency of recurrence (whether due to foci left behind or to a new formation like the first) to be local in or around the scar. Especially is the essentially local character of uterine carcinoma shown by the fact that operations in which the entire broad ligament is excised or necrotised, even in far advanced cases, yield results relatively splendid, compared with those operations in which the uterus alone is attacked. Uterine carcinoma is, therefore, especially adapted to surgical treatment; and the indication for such treatment depends solely on the possibility of its complete removal. The writer prefers the vaginal operation in all cases except a few where the carcinomatous enlargement of the uterus or its complication with myoma is so great that not even with the aid of vagino-perinæal incisions can the parts be brought out *in toto* through the vagina; he prefers clamps to ligatures on account of the wide crushing and necrotising effects of the former. Of 123 cases operated on under the above indications, 8 died from the operation; of 48 of these operated on more than five years ago, 13 have remained well; that is, we may consider 1 in 4 permanently cured.

A case is reported, first operated on at the age of 37 years for cauliflower carcinoma, who three years later presented at the site of the scar in the vault of the vagina hard, knob-like prominences; anteriorly a cone-shaped body, of the length of an almond, projected into the vagina, while behind and to the left there were wart-like, friable, easily bleeding masses. A free vagino-perinæal incision going around the rectum to the tip of the coccyx was made, and the left ischio-rectal fossa was separated up to the level of the vaginal vault, giving free access to the entire field of operation. An incision was made around the carcinomatous excrescence $1\frac{1}{2}$ cm. from the edge of the diseased parts. No difficulty was encountered except to the left and anteriorly on account of the close proximity of the bladder. The excised mass was about the size of a hen's egg. The slit in the peritonæum was drawn together, a piece of gauze introduced for drainage; this was removed on the fifth day, and on the fifteenth day the wound was completely healed. It will be seen that this case was not one of metastasis, but a local re-

currence in and around the scar. Attempts to remove these local recurrences are almost unknown in the literature, the writer having been able to find but one case.

Wound of the Right Ureter during Ovariectomy: Suture; Fistula; Recovery.

R. LAWFORD KNAGGS (*Lancet*, May 27, 1899) remarks that with few exceptions wounds of the ureters are accidents in the course of operations; they are liable to occur in operations for pelvic tumors involving the broad ligaments, in vaginal or sacral hysterectomy for cancer, and in Kraske's rectal operation; the last is mentioned because the writer saw in one case a post-mortem which revealed that the fatal peritonitis was due to an undetected complete division of the ureter.

The writer's case was in a woman 35 years of age. In removing a multilocular ovarian cyst from the right side a large band of fibrous tissue was included between ligatures; on cutting into this the ureter was partially divided. The ligatures were left and the distal end of the ureter separated from the tumor. After the removal of the latter, the ligatures were taken from the ureter, which was found to be cut half through. Its edges were drawn together by four interrupted silk sutures passing through all the coats; then four Lembert sutures were applied, and last the connective tissue about the ureter above and below the cut was brought together; a glass drainage-tube was inserted and iodoform gauze packed about the site of the injury. The operation was done on May 21st. On June 15th pus flowed from the wound, and a tender swelling could be detected bimanually; a rubber tube was substituted for the gauze, and the abscess continued to fill and discharge until about July 17th, when it became certain that the pus was mixed with urine. July 24th there was a fresh discharge of pus, cessation of pain and temperature, and development of an unmistakable urinary fistulæ, as much or more urine being passed into the dressings as from the bladder. August 1st a smaller drainage-tube was inserted; more of the urine was passed by the bladder, and August 6th the fistula was entirely closed; the tube was gradually removed and October 1st the patient was well, and remained so till a year after the operation, when she was last seen. The long time that elapsed before the development of the fistula is noteworthy; the abscess must have been due to leakage, but from the improvement following the change of tube we must infer that the fistula was much larger and the urine directed through it from pressure of the first tube upon the ureter below; the immediateness of

the change would show that no stenosis had occurred, at least below the seat of injury.

A review of the published cases follows: there are twelve of complete and five of partial division of the ureter in which uretero-ureteral anastomosis has been done and five of complete section in which the upper end has been grafted into the bladder; five more cases are listed in which the latter operation was performed as a secondary or independent measure. But four of these cases have died, and these from outside causes; from this ureteral injury might seem a trivial affair, but the lists cannot be complete, as it occurs only in severe operations, where an additional unfavorable factor must be of much importance, and it may have been contradictory to a number of unpublished fatal results.

Several ways of dealing with the injury have been resorted to. Union of the divided ends (uretero-ureteral anastomosis) has been accomplished (1) by the end-to-end method; (2) by the lateral implantation of Van Hook, in which the vesical segment is ligatured, a longitudinal cut made below the ligature into which the split upper segment is drawn by traction sutures, and the whole covered by folds of peritonæum; (3) by the end-in-end method, by which the upper end is invaginated in the split lower extremity and thus sutured. It is not improbable that even in case of partial division it would be better to complete the section and employ the second or third method, leakage usually following the first. Of the effect upon the kidney we have but one piece of evidence—one case in which the seat of union was enclosed in cicatricial tissue with a resulting hydronephrosis; the long periods of good health which have elapsed in other cases go to show that this is not a usual occurrence.

Bladder implantation has been done seven times by the abdominal route, and five times by other routes. There are three methods: (1) splitting the end of the ureter and suturing it to the bladder incision; (2) implantation of the end through a small hole in the bladder by means of Van Hook's traction sutures; (3) extra-peritonæal implantation (Witzel), by which the ureter is made to take an oblique course through muscular bladder tissue. Implantation is the operation of choice; leakage has not occurred; regurgitation has not been shown to be a danger, and in fact it is quite possible that the peristaltic power of the tube prevents this. In some cases a certain amount of the ureter has had to be sacrificed; sometimes it has been sufficiently dilated and elongated to make up for this. Kelly overcame the difficulty by severing the bladder attachments in front and at the sides; Baldy sutured the bladder to the pelvic wall; Witzel pulled the bladder up and attached

it on the right side. Various interesting experiments upon animals have been made: among them may be mentioned fastening both ends of the ureter to the external wound under tension, the stretching permitting later anastomosis; fixing the kidney at the iliac crest; and making a diverticulum from the bladder which should be placed in the abdominal wall and meet the end of the ureter.

Of practical bearing on the operation are the following: the elasticity of the ureter, allowing considerable dilatation or stretching; the larger sectional area and diminishing liability to stenosis from oblique section and from splitting the grafted end; and the importance of tying the vesical end in bladder implantation. Regarding the choice of operation, Kelly says that where the cut is far enough from the bladder to allow of the upper end being inserted into the lower, the former is too far from the bladder to allow implantation; on the other hand, when the cut is near the bladder uretero-ureteral anastomosis is awkward or impossible; the only cases in which election is possible are those in which the ureter has become lengthened; in these he would do anastomosis if the tube be also dilated; otherwise bladder implantation.

Grafting of the ureter into the skin or vagina is to be regarded as only a temporary or palliative measure. Nephrectomy is admissible only in very exceptional cases, or when septic infection of the kidney has resulted from the fistula, and all other means fail. Implantation into the bowel need be mentioned only to be condemned, as it usually results in infection of the kidney and frequently in constriction at the seat of implantation. Ligation of the ureter is not likely to have a practical value; it has too many risks, though in many cases it has been demonstrated that the function of the kidney may be kept in abeyance for a considerable period, to be resumed on removing the ligature.

Diagnostic ureterotomy should be mentioned here. Dr. Kelly, in four operations in which he feared that he had included a ureter in a ligature, exposed the tube at the pelvic brim, and through a longitudinal incision passed a sound towards the bladder; in two cases he found his suspicions verified and removed the ligatures; the incisions were then closed with mattress sutures. No leakage took place, and no trouble resulted either from the temporary ligation or from the operation.

Chronic Inversion of the Uterus reduced by Aveling's Repositor.

JOHN B. HELLIER (*The Lancet*, July 15, 1899) says that chronic inversion of the uterus is one of the rarest of morbid conditions. Acute inversion is so rare that it occurred but once in 190,800 labors at the

Lying-in-Hospital in Dublin. But for acute inversion to become chronic it must remain unreduced, the patient must survive the danger of a speedy, fatal termination, and involution must take place. In April, 1899, a patient was admitted into the hospital at Leeds, complaining of "flooding." She gave this history: Five days after a tedious labor, with forceps delivery, on October 4, 1898, she had bearing-down pains and a tumor presented at the vulva, which she tried to get rid of by straining. The medical man who was summoned told the writer that he reduced the inverted uterus without an anæsthetic. After this the patient was free from pain, but had a somewhat offensive leucorrhœa. Three months later she had a normal menstruation, and a month later an excessive amount of blood was lost. On March 31st hæmorrhage began and continued until her admission to the hospital eleven days later.

The patient was very anæmic. The vagina was filled by the inverted uterus, which felt like a polypus hanging from the cervix by a narrow pedicle. The surface of the tumor was soft and vascular, bleeding easily. Iron and antiseptic douches were ordered, and on April 17th an unsuccessful attempt was made to reduce it under ether. On the 25th Aveling's repositor was applied. The cup employed had a diameter of one and a half inches. The uterus was still unreduced on the next day, so the repositor was reapplied. Fifty-one hours after application the fundus was found to have gone up; the cup of the repositor had followed the fundus and was so firmly grasped by the cervix that it had to be removed under ether. There was still a slight inversion of the fundus, but by pressure and counter-extension on the cervix, reduction was completed. The uterine cavity, which measured $3\frac{1}{2}$ inches, was washed out and packed with iodoform gauze. There was a slight rise of temperature for three days, with some abdominal tenderness and an offensive discharge. The gauze was removed after twenty-four hours. On May 5th the uterine cavity only measured $2\frac{1}{2}$ inches. The inversion was cured after a duration of twenty-nine weeks. The amount of pressure used was about three pounds. The history of this patient bears out the statement that if a case of inversion survive the stage of involution it may give little trouble until menstruation is established, when hæmorrhage will occur. In case all other methods fail Küstner's operation should be tried. As no clear account of this is given in English text-books, a brief description of the operation is given.

A transverse incision was made through the posterior vaginal cul-de-sac into Douglas' pouch; through this, with his index finger, he un-

successfully tried to reduce the inversion. An incision was then made in the middle line from the surface of the posterior wall of the uterus through to the peritonæum, using the index finger in the cup of the inversion as a guide. The incision began four-fifths of an inch from the extreme fundus, was four-fifths of an inch long, and ended four-fifths of an inch from the os externum. The inversion was then easily reduced. With volsella forceps he retroflected the uterus, drawing it into the incision in the vagina, and sutured the uterine wound from the peritonæal side, then the vaginal wound was closed. The operation was successful.

On the Experimental Production of Hydrosalpinx and Hydrometra in Animals and Its Relation to Hydrosalpinx in the Human Subject.

C. J. BOND (*Lancet*, July 22, 1899) recalls that in a previous article he established the fact that in rabbits, guinea-pigs, and other animals a typical hydrosalpinx could be induced by antiseptically ligaturing the Fallopian tube close to the cornu of the uterus and also at its beginning; the fluid thus produced closely resembles the fluid of a human hydrosalpinx. If the ligature be placed instead about the uterine cornu, the cornu distends above the ligature and a hydrometra results, the fluid resembling that derived from the tube. The fact that in the lower animals the secretion of the uterus and of the tubes is so much alike corresponds with the slight degree of differentiation between these two portions of the oviduct; whereas in the human subject, differentiation having advanced further, the uterine secretion is a mixture of blood, mucus, and epithelial débris—at least during the menstrual period; whether in the intermenstrual period a saline watery fluid be produced and reabsorbed we do not know.

In animals there is an important difference between ligature of the uterine cornu and ligature of the tube. If the tube be ligatured only at the uterine end no distension takes place, the secretion probably occurring, but escaping into the abdominal cavity, where it is absorbed. If, however, the cornu be ligatured at any point, the cornu distends above the ligature with resulting hydrometra, any backward current being prevented, even though the tube remains unobstructed and the passage seems to be clear in the other direction. This throws light upon the fact that distension of the human uterus with blood or fluids does not cause backward distension of the tubes, except in cases of mechanical displacement or bacterial infection; it does not oppose the view that spermatozoa may enter the tube. A number of points are

illustrated by the following case: in a young girl, whose vagina was absent, an attempt to restore the canal by dissection resulted in a septic endometritis followed by a right pyosalpinx; on abdominal section the left tube was found normal, except that it ended in a cul-de-sac close to the uterus. Not only did this case illustrate the direct extension of the infective process in the case of the right tube, but also in the left tube that occlusion at the uterine end does not produce hydrosalpinx.

This absence of regurgitation from uterus to tubes, even under pressure, in animals, led the writer to think that the menstrual fluid occasionally found during menstruation in human tubes originated therein. Conditions in the human subject are different, however, and it appears that in cases of retroversion of the uterus regurgitation of the uterine menstrual fluid does actually take place into the tubes; it is suggestive that in these cases there was great congestion of the fundus due to mechanical displacement. This regurgitation has been proved in some cases by means of particles of carmine.

It seems to be demonstrated that in animals, and in the human subject as far as the Fallopian tube is concerned, the mucous membrane of the oviduct has a characteristic secretion. This secretion seems to be absent during pregnancy: a rabbit in which one cornu was ligatured became pregnant in the patent cornu; on killing the animal at term, it was found that no hydrometra had occurred in the ligatured tube, although it was somewhat larger than formerly from hypertrophy of the mucous membrane similar to but less marked than that in the pregnant cornu. An analogous condition is present when pregnancy takes place in one horn of a human uterus bicornis; and a case is cited of extra-uterine pregnancy in the subject of a uterus bicornis in which both uteri presented a well-marked decidua. It appears, therefore, that the uterine secretion is associated with the ordinary destructive processes of the generative canal and not with the constructive processes and increased tissue growth of pregnancy. We must not regard human hydrosalpinx as a final condition in infective inflammation of the tube, but only as a mechanical distension by normal secretion, due to closure of both ends of the tube by inflammation; while pyosalpinx occurs when the infection has invaded the whole tubal mucosa, destroying its secreting powers and changing it into an abscess cavity.

Another interesting fact—that the fluid in a simple parovarian cyst closely resembles that in distended Fallopian tubes—points to the origin of these cysts in a hyperdistension by a physiological fluid of a portion of the efferent ducts of the paroöphoron.

The After-Treatment and Post-operative Complications of Cæliotomy for Pelvic Disease in Women.

W. F. VICTOR BONNEY (*The Lancet*, August 5, 1899) gives the routine treatment as practised at the Hospital for Women in Chelsea. The operation is performed in the afternoon and the patient is then placed in bed with hot-water bottles, and plenty of blankets arranged over a bed-cradle, to avoid weight over the abdomen. About five hours after the operation a catheter is passed. From three to four ounces of urine should be withdrawn unless the patient is suffering from shock, suppression of urine or injury to a ureter. In case of the latter accident there is usually blood in the urine. In cases of hysterectomy the catheter is used for twenty-four hours. In other cases the patient is to empty her own bladder.

Unless there is shock no nourishment is given until 2 A.M. the following day, when a nutrient enema is given. At 6 and again at 9 A.M. three ounces of hot water are administered by mouth. Later ounce doses of milk and hot water may be given every hour. On the second day two ounces every two hours is given, beef tea may be substituted a few times. The third day the amount is increased to three ounces each of milk and hot water every two hours. On the fourth day the bowels are moved with a soap and water enema, and the patient's diet increased, until after the sixth day a full and generous diet with the addition of port wine and a tonic is given.

During the first two days a rectal tube is passed every four hours to facilitate the escape of gas. Should flatus persist the rectum may be washed out with a warm solution of boric acid, or with half an ounce of turpentine in a pint of hot water in obstinate cases.

The pulse is an unfailing guide as to the patient's condition. It should never exceed 120, even during the first few hours after operation. After this it should not exceed 80 or 90, although nervous excitement may cause alarmingly rapid action for a time in some patients.

In ordinary cases the temperature rises after the operation to about 100° and may remain so for the first day. It should be normal after the third day, although some otherwise normal cases maintain a slight temperature for a week. Subnormal temperature means shock or hæmorrhage. A rapidly rising temperature is always a bad indication. Persistently high temperature should always lead to an examination for stitch abscesses. In such cases the pus must be let out, and if necessary, the troublesome suture removed. Nervous disturbances may lead to a sudden but temporary elevation, but are always accom-

panied by a full though rapid pulse. Even bronchitis, or later on, constipation, may elevate the temperature.

Persistent vomiting is either irritative, neurotic, peritonitic, or obstructive. The first is due to gastritis set up by the anæsthetic. Nutrient enemata may be substituted for feeding by mouth if the vomiting persists. Drachm doses of bicarbonate of soda will usually control it. A soap-and-water enema is almost unfailing in its good results. In neurotic vomiting a good scolding is often efficient in hysterical patients. A mustard leaf over the epigastrium or the addition of a little brandy to the food may be useful. The last two forms of vomiting come on gradually and are accompanied by other marked symptoms.

Abdominal distension may be either epigastric, parietic, obstructive or peritonitic. The first is usually relieved by washing out the rectum. Five minims of essence of peppermint with thirty grains of bicarbonate of soda in three ounces of hot water will bring relief. Parietic distension is characterized by a uniform distension without tenderness or abdominal rigidity. If unrelieved it may become serious.

Where this is due to paresis of the intestinal walls a high enema containing half an ounce of turpentine and an ounce of castor-oil in a pint of soap and water will relieve it. The rectal tube will also aid in reducing the distension. Peritonitic distension is marked by pain, rigidity, and early collapse. Treatment is comparatively unavailing.

In obstructive distension there is persistent and increased vomiting and an unfavorable pulse and temperature. The distension is moderate and is most marked in the descending colon and sigmoid.

Pain is usually most marked in cases where there is tension, as after ventro-fixation, or where a sac is left and stitched to the abdominal wound.

Hæmorrhage and Shock must be carefully differentiated. It is hard to distinguish shock following loss of blood from an operation, from post-operative hæmorrhage. Shock follows immediately after the operation and tends to improve, while hæmorrhage develops at some definite period after the operation and the condition becomes worse. In hæmorrhage the patient is restless with sighing respiration. In shock the patient is quiet and the breathing is quick and shallow. Brandy enemata and saline transfusion must be used in shock. Transfusion is worse than useless where hæmorrhage is going on. The bleeding point must be found and secured.

Remote shock usually occurs in feeble, elderly patients, especially where there is cardio-vascular degeneration. The patient rallies well from the first shock of the operation and on the following day the pulse is fast, strong, and throbbing, the eyes glistening, and the patient

"feels well." These symptoms become accentuated, there is increased mental activity, restlessness, and absence of sleep. The pulse becomes faster, but more running, the mind wanders, the respirations quicken, strength fails rapidly, and death ensues in three or four days.

Respiratory Complications.—For ether bronchitis the following mixture is recommended. Bicarbonate of soda 30 grs., aromatic spirits of ammonia half a drachm, chloroform twenty minims, in an ounce of camphor-water; to be taken every four hours. Pulmonary embolism, if large, causes immediate death. Septic broncho-pneumonia, characterized by diffuse dry râles and little or no expectoration, is hopeless.

Hæmatoma of the abdominal wound is discovered only when the skin sutures are removed at the end of a week. If the cavity is small, scrape out the clot and powder with iodoform. If the cavity is large it must be closed with fresh silkworm-gut sutures.

Bladder symptoms often develop about the second week, due to an infection of the bladder wall. The urine may remain acid, and yet pus in small quantities will be found. Salol, in fifteen-grain doses, t. i. d., is almost a specific. If this condition is neglected acute cystitis may follow. Suppression, if the urine is bloody, is due to injury or compression of the ureter; if the urine is clear it is due to renal shock, and the usual measures must be used.

Femoral thrombosis usually appears about the twelfth day. It is generally preceded by fever, sallow face, and malaise. The left leg is usually the one affected, although the right or both may suffer. This complication may occur after slight as well as after grave operations. The treatment is rest, elevation, firm bandaging, and the application of glycerine and belladonna locally, with a generous diet and stimulants. Inflammatory pelvic effusion occurs about the end of the second week. There is fever, weakness, and wasting, together with frequent and painful micturition. Vaginal examination reveals a pelvic effusion which, with rest in bed, usually subsides in a week or so without sup-puration. If pus forms it must be evacuated. Quinine and stimulants are indicated.

Acute parotitis is a rare and unexplainable complication. It usually subsides without suppuration, but in cachectic patients the whole gland may slough. This condition is dangerous because of the constitutional depression, and the possibility of extension of the ulceration to the carotid. In this latter emergency the common carotid must be ligated. In mild cases painting with belladonna and glycerine is good. If the skin becomes dusky hot fomentations and careful incisions in the lines of the important nerves and vessels of the region must be used. Facial paralysis may coexist or remain permanently after this complication.

THE · THERAPEUTIC · FORUM

ALBERT C. BARNES, A.M., M.D., SUB-EDITOR.

The object of this Department is, as it has been heretofore announced, to give to the profession an opportunity to obtain independent criticism and information, especially in regard to the newer therapeutic agents, which shall be free from prejudice and from the suggestion of the manufacturers.

All communications from reputable physicians will be received, if the authors' names be signed to the articles. In all cases where the request is made, the names of such contributors will be withheld from publication.

ORIGINAL COMMUNICATIONS.

COLLECTIVE REPORTS ON GLYCERINIZED VACCINE LYMPH.

BY ALBERT C. BARNES, M.D., PHILADELPHIA.

The recent widespread epidemic of smallpox in the United States has necessitated general vaccination which has afforded excellent opportunities to determine the exact actual and comparative value of glycerinized vaccine.

For the past ten months I have been collecting reports from various infected districts in an effort to ascertain not only the actual value of glycerinized vaccine as a protective against smallpox but its relative value compared with vaccine points, quills, crusts, and the older methods of producing vaccination.

Other objects to be determined were (1) the value of glycerinized vaccine as a preventive of smallpox; (2) the proportion of successful "takes" in both primary and secondary vaccinations; (3) the relative frequency of complications, such as diffuse inflammation of the vaccinated area—cellulitis lymphangitis, lymphadenitis ulcerations, abscesses, etc.—which so often follow the use of vaccine points.

The methods of inquiry adopted in this investigation, were by circu-

lar letter and personal inquiry, by large numbers of physicians throughout the country.

In a certain number of cases where wholesale vaccination was practised, as for instance by health authorities, exact figures could not, for various reasons be obtained. However, in such instances, the reports were conservative and were none the less illustrative and convincing.

In Baltimore, where for several months there has been a number of cases of smallpox, there were employed by the health authorities and physicians in private practice, considerable over 100,000 tubes of glycerinized vaccine. Those vaccinated were periodically observed until the success or failure of the vaccination was determined. In not a single instance did smallpox occur in a person vaccinated with glycerinized lymph. Conservative estimate places the number of successful takes as 95 per cent. in primary cases. The vesicles in most instances were typical and uncomplicated with staphylococcic and streptococcic infection. The number of excessively sore arms did not exceed one per cent. of the total number vaccinated.

In Minneapolis, in one series of 3045 vaccinations with glycerinized lymph there were 29 failures all of which were in secondary cases, *i. e.*, those who had been previously vaccinated. In the same city a second series of 3875 vaccinations resulted in four failures in primary cases and in 51 failures in secondary cases. All the data collected from Minneapolis show a proportion of 95 per cent. successful "takes" in primary cases and 75 per cent. in secondary cases.

Cleveland records show that widespread vaccination was practiced. Both glycerinized vaccine and points were employed at the beginning until results proved the vast superiority of the glycerinized lymph when points were almost entirely abandoned.

In one series of 20,000 cases vaccinated with the glycerinized product, there was an average of over 90 per cent. successful takes. Septic complications were almost entirely absent.

In Richmond, Norfolk, and Portsmouth, Virginia, no accurate records were kept of results obtained, but in these three cities there were employed about 120,000 tubes of glycerinized lymph. Extensive inquiry concerning results obtained, place the successful takes over 90 per cent. In these cities the superiority of the glycerinized lymph over the points, in producing successful vaccinations and avoiding septic complications, were everywhere noted. The experience of the health authorities and physicians in private practice in Norfolk, is particularly valuable. At the beginning of the smallpox outbreak, vaccine points of a standard make, were employed extensively. In a large number of

cases, smallpox in a virulent form occurred among patients who had been vaccinated with points. This shows that the inflammatory reaction which took place at the site of vaccination, was due to staphylococcic infection and was not true vaccination.

From Philadelphia, Indianapolis, Chicago, Gloucester Co., Va., Pittsburgh, Alleghany, Standwood, Ia., Lisbon, Ia., and over 40 small towns throughout the country, responses to inquiry show that while no accurate records were kept, the glycerinized vaccine in comparison with points had proved so superior in producing successful vaccinations (averages from 90 to 95 per cent.) and in affording freedom from septic complications, that points had been largely abandoned in those places in which comparative tests had been made.

In Porto Rico, under the supervision of Dr. George G. Groff, Major and Brigade-Surgeon, U. S. A., extensive vaccination was practiced. Vaccine points in this climate failed entirely while glycerinized vaccine yielded about 90 per cent. of successful vaccinations.

Dr. R. T. Hammond Jessup, Md., had vaccinated 236 patients with glycerinized lymph and had but one failure; no excessively sore arms resulted.

A series of 70 vaccinations in private practice in Indianapolis, with glycerinized lymph, showed successful takes in all but one case. No septic complications.

Dr. F. V. Ely, Pittsburgh, secured 36 successful takes in a series of 40 vaccinations with glycerinized lymph. This is remarkable inasmuch as at least one-third of these cases were secondaries.

Dr. F. A. Crosby, Beach Ridge, N. Y., reports 100 per cent. successful vaccinations with glycerinized lymph in a series of 60 cases. Sore arms were not noted.

Dr. G. G. Rusk, Baltimore, vaccinated 360 persons with glycerinized lymph and obtained successful "take" in every instance.

Dr. C. T. Mattefeldt, Catonsville, Md., employed glycerinized vaccine in a series of 157 cases, 20 per cent. of which were secondaries; 155 successful vaccinations resulted.

Dr. D. W. Dodson, Nanticoke, Pa., reports that in a series of 250 cases he secured 100 per cent. successful vaccinations with glycerinized lymph.

Dr. J. R. Faust, Mann's Choice, Pa., vaccinated 130 school children and teachers every one of which was successful.

Dr. A. J. Taylor, member of Board of Health, Caribou, Maine, reports 200 primary vaccinations with 30 failures; of the latter 27 were revaccinated with 14 successful takes. This experience shows the

value of revaccination in those cases in which successful result did not follow first vaccination. The average in this series of cases was over 90 per cent. successful "takes."

Dr. W. F. Beyer, Punxsatavuly, Pa., vaccinated 300 cases, *primary and secondary*, and secured 98 per cent. successful "takes"—in other words there were but six failures.

A large number of other private reports show that glycerinized lymph yielded from 90 to 100 per cent. of successful takes in primary cases and from 60 to 75 per cent. in secondaries.

Conclusions: This investigation proves conclusively that the recommendation of the United States Marine Hospital Service that "glycerinized vaccine only should be employed" ("Public Health Reports," Jan. 9, 1899) is well substantiated by experience because:

1. Properly prepared glycerinized vaccine is pure and free from staphylococci, streptococci, and other pathogenic organisms which are invariably found (Copeman, Crookshank, Pfeiffer, Reed (U. S. A.)) on vaccine points.

2. Glycerinized vaccine affords absolute protection against smallpox; vaccine points are uncertain in this regard.

3. Vaccination with the glycerinized products does not cause excessive inflammation of the vaccinated area. Cellulitis and inflammation of the lymph vessels and glands amounting at times to abscess formation is a not infrequent sequence of the use of vaccine points.

4. Vaccine points are apt to lead to a false sense of security inasmuch as they induce a local staphylococcic or streptococcic infection which is entirely distinct from true vaccination. Such a result is not protective against smallpox.

5. A high estimate of successful takes from vaccine points, is by these and numerous other reports shown to be not over sixty per cent. in primary cases and a much lower percentage in secondary cases.

6. Glycerinized vaccine has been officially adopted by the governments and health authorities of the United States, Great Britain, Germany, France, Russia, and Belgium. It should be universally adopted in private practice.

CLINICAL NOTES ON PROTARGOL IN PURULENT DISEASES OF THE EYE.

BY EDWARD S. PECK, M.D., NEW YORK,

Professor of Diseases of the Eye at the Post-Graduate Medical School and Hospital; Senior Ophthalmic Surgeon of the City Hospital.

The memoranda here made confirm the results found in the preceding cases and affirm the superiority of protargol, in proper solutions, over every other known germicidal astringent in ophthalmic practice. The following résumé of a few cases in my private practice is perhaps of more value than a large group of similar cases in a hospital or dispensary practice.

Case I.—A lady of forty-four years had a mucocoele of the lachrymal sac of eleven-years' duration, during which it had been vigorously treated at the Massachusetts Eye and Ear Infirmary and elsewhere; it had never entirely ceased as a discharge, but in its best condition, was a pure mucocoele devoid of pus. After the usual operation of slitting the lachrymal sac and of probing down to the middle meatus of the nose, protargol, in five-per-cent. solution, was used through a canula with the result of entire disappearance of the mucocoele. This occurred in a space of two and one-half months.

Case II.—A lady of thirty-five years of age was sent to me by Dr. F. E. Woolworth of Brooklyn, she had a very irritating dacryocystoblennorrhœa of five-years' duration; the lower punctum and canaliculus were in a condition of enlargement and redness with more or less pain; the usual deep incision brought out a number of good-sized lachryoliths. Probing and a five-per-cent. solution of protargol, by means of Wecker's canula, brought this disease to a termination in the course of two and a half to three months.

Case III.—A highly graphic case was sent to me by Dr. W. S. Seamans of the Equitable Life Assurance Society of New York, in which, for five years, there had been an irritating discharge from the lower punctum of the left eye. Four years ago in New Orleans, there had been an outburst of inflammation to such an extent that the patient was obliged to desist from his work and undergo treatment, consisting of hot fomentations and astringents. He apparently recovered from this attack to a certain degree in ten days. A constant discharge has per-

sisted during the last four years until, on account of some exposure of his eye, a very irritating and profuse blennorrhœa of the lachrymal sac occurred, inflaming the left eye and poisoning the opposite eye. A deep incision was made, cutting the lachrymal sac in four directions throughout its entire length. Three probings followed the operation, together with the use of a five-per-cent. solution of protargol. So satisfactory was the treatment that in five days all discharge had disappeared and the parts had apparently perfectly healed.

Cases IV.-V.—Two cases of less gravity were sent to me, one by Professor Max Einhorn, during the last winter with inflammation of the lachrymal sac; in neither of them was there a profuse discharge of pus, but it was of sufficient amount and severity to warrant a deep incision, the usual probings and protargol. These were carried out in the usual way with the satisfaction of a prompt stoppage of all discharge within, in one case, five days and in the other case, ten days.

Case VI.—A boy of ten years of age was sent to me with double purulent conjunctivitis of a severe type; the discharge was profuse in both eyes and had lasted, up to the time of his first visit, four days, the right eye having discharged one day less than the left. Treatment by ice-cold applications and a three-per-cent. solution of protargol used as an eye-drop, in the hands of a competent nurse, brought about a complete resolution of the discharge in sixteen days.

Case VII.—I was called to see a child of ten days of age in response to a note from its physician, describing a blennorrhœa of both eyes of two-days' duration. The physician, a competent observer, was unable to trace the source of origin, as the child was in every way perfectly well and its mother a thoroughly healthy woman. The confinement had been normal and easy and the mother was making a good recovery. It was evidently one of those unexplainable cases due to a mild leucorrhœa which had attacked the eyes late and which was easily amenable to treatment. Ice-cold applications and a three-per-cent. solution of protargol were used continuously for five days and nights, with a complete recovery.

These few cases are introduced from notes in private practice during the last six months, as they represent a fairly good ratio of such cases among people who are well-to-do and able to have the services of a thoroughly competent nurse. I desire to add that I am in the habit of using, at my clinic at the Post-Graduate Medical School, solutions of protargol varying from one-half to five per cent., in all cases of inflammatory and irritable discharges from the eye. Such a practice carries with it an element of safety that cannot be assured in the prescribing of

eye-drops of nitrate of silver; as in relegating the use of nitrate of silver to patients' hands in their own home, there is always an element of danger. In addition, it is to be emphasized that solutions of protargol are far less painful than solutions of silver nitrate. I am also in the habit of using from one-half to a two-per-cent. solution of silver nitrate at the table in my clinic, but prefer, for use at home on the part of patients and their parents, such solutions as are here noted of protargol.

A CASE OF SEPTICÆMIA POST-ABORTUM.

BY ROBERT H. LAWRENCE, M.D., CHICAGO, ILL.

Mrs. D. A., age 23. Married 5 months. Aborted October 1st. Was called to see her at noon, October 5th. Found patient in bed, great difficulty in breathing, with pain in abdomen which was very tympanic and sore, foul odor—very noticeable during examination. Gave history of previous good health, but continuous flow of blood from vagina for 5 days. On examination found clots of retained placenta. Temperature 103° . Pulse 122. Used curette and gave carbolyzed douche. 8 P.M.: Temperature 104° . Pulse 150. Gave stimulants and intra-uterine douche borolyptol $\frac{3}{ii}$ and vaginal douche carbolyzed water. Consultation with Dr. H. P. Nelson. Prognosis very doubtful. Diaphoretics and stimulants ordered every half-hour.

Same day, 11.30 P.M.: Temperature 101.6° ; pulse 126. Vomited freely, mild perspiration, light sleep.

October 6th—5 A.M.: Temperature 104.4° ; pulse rapid and weak—skin dry—ordered diaphoretics every 15 minutes for 4 hours, and stimulants every hour. Surrounded with hot-water bottles.

2.30 P.M.: Temperature 104° . Diaphoretics every 15 minutes. Stimulants every half-hour. Intra-uterine douche borolyptol $\frac{3}{ii}$. 6 P.M.: Temperature 103° , pulse 130.

Consultation with Dr. A. McDiarmid. Cured again under full anæsthesia and uses $\frac{1}{3000}$ -bichloride solution as douche—this procedure was followed by a severe chill, abdominal tenderness and involuntary bowel evacuations. At 8.30, temperature had risen to 105.5° , pulse 140.

October 7th, 10 A.M.: Temperature 100.2° , pulse 108. During the day temperature rose gradually, and at 6 P.M., was 104.4° . Then gave intra-uterine douche bichloride $\frac{1}{4000}$ which was followed, as before by

very severe chill, abdominal pain and involuntary bowel movements, at 9 P.M., temperature had risen to 106.4°, pulse 150, respiration 36, patient very restless.

October 8th, 1 A.M.: Temperature 102.6°, pulse 120. Stimulants and diaphoretics continued, but hot-water bottles removed. Temperature at 2.30 P.M., had dropped to 101°. Intra-uterine douche borolyptol 3ii. Vaginal douche borolyptol solution. After this temperature continued below 100° until October 9th, at 11 A.M., when it rose to 102.8°. Borolyptol douche repeated, several large clots washed away, no pain, no chills as after bichloride, but a rather restless night. Temperature continued low until noon, when borolyptol intra-uterine douche again repeated after which patient slept for 3 hours.

October 10th, 10 A.M.: Temperature 100.2° borolyptol 3ii intra-uterine douche and a similar douche at 10 P.M. These douches were repeated twice a day until October 15th, during which time temperature did not rise above 100°, discharge gradually decreased and my attendance ceased October 21st, when patient had fully recovered.

I am very much pleased with the action of borolyptol in this case as compared with mercuric bichloride—no pain, chills, or rise of temperature followed its use and its action was in every way superior to that of the sublimate.

SOME CLINICAL USES OF BOROFORM.

BY JOHN O. POLAK, B.S., M.D.,

Adjunct Professor Obstetrics, N. Y. Post-Graduate Medical School; Surgeon to the Williamsburgh Hospital.

Some time ago a quantity of boroform was sent to me with the request that I test its efficacy as a substitute for iodoform and aristol. Pursuant with this request I have put it to the most varied uses, *viz.*: as a dry dressing in operation wounds, burns, chancroid, ulcers, etc., and have employed it also as an ointment in a strength of ten per cent. In the latter form I have not been satisfied with its use, it having the same objections as ointments generally in the treatment of wounds. As a dusting powder it is a great success. It is less toxic than either iodoform or aristol, less expensive, yet combines the therapeutic properties of both. Boroform is an odorless, palpable powder, having an appearance almost identical with aristol. It is insoluble in water, and is the

synthetical resultant in combining thymol, iodide of potassium, iodine, caustic soda, and boric acid.

In but one case did any toxic symptoms occur, this was in a child with an extensive burn of the body. Boroform was used very freely. The following day symptoms of poisoning were apparent, manifested by fever, rapid pulse, stupor, and erythema. These symptoms rapidly passed off on removal of the dressing. As the child was but a year old and the surfaces burned included the chest, axilla, right arm, right thigh, and left ankle, one may readily see that sufficient opportunity was afforded for its absorption. All the wounds in which boroform has been used have healed rapidly and cleanly. I have noted a marked diminution in the amount of discharge after its employment in suppurating wounds, this was particularly noticeable in chancroids.

THERAPEUTICS OF HOT DRY AIR.

BY GEO. L. KESSLER, M.D., BROOKLYN, N. Y.

Hot air as a therapeutic agent is as old as history itself, but it is only within the last five years that mechanical devices have rendered its general application possible.

Recently Landouzy, Dejerine, and Edouard Chretien of Paris have reported marked success with the local application of hot dry air at temperatures varying from 200° to 250° F., in acute, chronic, and gonorrhœal rheumatism, and in chlorosis.

Among the many affections in which American and English authorities report favorable results may be mentioned writer's cramp, chorea complicated by peri- and endocarditis, sciatica, all forms of rheumatism, neuralgia, gout, arthritis-deformans, valvular cardiac diseases, obesity, chronic ulcers, neuritis, convalescence of hip-joint disease, and painful tubercular knee. Pneumonia, anæmia, ovaritis, asthma, pleurisy, and pleurodynia have been reported cured. Hollaender reported success in the treatment of lupus, at the last meeting of the German Surgical Society, Berlin, April 8, 1899.

Heretofore a great difficulty in the use of hot dry air therapeutically has been to apply it at a very high temperature (250°-380° F.) without burning the patient by contact with some portion of the apparatus. After many years' experimentation with various materials Mr. A. V.

M. Sprague of this city discovered that fibrous magnesia would withstand a temperature of 400° F. for at least one hour before becoming unbearable to the patient.

The Sprague apparatus not only prevents burning accidents, but also keeps the contained air constantly circulating and dry, thereby causing very rapid evaporation of the perspiration induced, and by the cold so produced, makes it possible for the occupant to stand great heat without a sense of oppression.

In arriving at my conclusions all patients were thoroughly examined and the conditions found carefully noted (to be compared at intervals with the results obtained from the treatment), then, if found suitable cases, they disrobed and donned a bath-robe, and so attired entered the moderately heated machine.

The temperature, pulse, respiration, and a specimen of urine were taken, and all exposed parts covered with dry cloths, after which the apparatus was closed, leaving the head and as much of the body exposed as was deemed necessary.

A trained nurse in constant attendance gave the patient a glass of cool water from time to time. To this some would object. If the patient complained of feeling uncomfortably hot (which was uncommon if properly fixed at the start), the attendant put fresh dry cloths over the affected parts. A cool damp cloth was kept on the brow of the patient to prevent any tendency to cerebral congestion. In thirty-five to sixty minutes the temperature, pulse, and respiration were taken again, and the patients removed from the machine, their sweat taken and tested, and they rolled up in a blanket, placed upon a padded table, and there allowed to perspire for about half an hour, when they were rubbed dry and thoroughly massaged by a Swedish masseur.

A rubber completed the work by washing the patient and rubbing the body and limbs with alcohol. Another specimen of urine was taken and the patient allowed to depart, when thoroughly cooled off.

From careful observation of the effects produced by the hot air upon patients while in the machine, I have noticed the following:

I. A contraction followed in a few minutes by a dilatation of the superficial arterioles and capillaries, causing a deep flush to spread over the whole body.

II. The pulse becomes full, strong, and increases from ten to twenty-five beats per minute.

III. Increase of the temperature, taken by the mouth, of one to five, rarely six, degrees Fahrenheit; the rectal temperature, normally higher, being usually about $\frac{1}{3}^{\circ}$ F. less than that of the mouth.

IV. Induction of a profuse acid perspiration with increased specific gravity.

V. Almost immediate relief from pain.

VI. Relaxation of muscular spasms.

VII. General sense of discomfort.

VIII. Loosening of small stiff joints.

IX. Stimulation of the cutaneous nerves and lymphatic circulation.

X. Increase in the alkalinity of the blood, and a temporary increase of the number of corpuscles.

XI. Decrease in œdematous swelling.

XII. Increase in the respiratory movements, from two to six per minute.

XIII. Marked acidity of the sputum in gouty and rheumatic cases.

XIV. Nervous restlessness and muscular twitching, if exposed too long.

XV. Slight thirst in some cases.

XVI. Decreased specific gravity of the urine passed immediately after leaving the hot-air apparatus.

XVII. Limits the inflammatory reactions following the breaking up of adhesions, sprains, etc.

After a number of treatments the secondary results show:

I. Increased excretion of uric acid in lithæmic cases.

II. Softening and absorption of deposits of urates, exuberant callos, fibrous adhesions, œdema, etc.

III. Reduction, and sometimes entire relief, of albuminuria in kidney and cardiac disease.

IV. Toning of the circulatory apparatus and excretory organs.

V. Moderate loss of weight in slim, and greater loss in stout people.

VI. Great improvement in some chronic skin diseases, and the disappearance of acne in gouty cases.

VII. Temporary increase of soreness and nervousness in gouty and rheumatic patients during the absorption of urates and other deposits from the tissues.

VIII. Debility, if subjected to daily baths for a long period.

The loss of weight, referred to in the foregoing results gradually returns after the treatment is discontinued, but in corpulent persons the weight can be kept down by suitable diet and an occasional bath. One patient of 218 pounds was reduced to 180 in about fifteen treatments, and has remained so ever since.

Though there is contraction before the dilatation of the superficial

capillaries and arterioles, I have found no untoward effects in advanced cases of general arterial sclerosis which one would naturally suppose would be induced by the increased blood pressure.

My explanation is, that the preliminary contraction is very transient, and disappears before the action of the heart is accelerated to any extent; then the following vascular dilatation is only superficial, and more than sufficient to relieve the deeper circulation from the effects of the quickened blood current. The fact of congested mucous membranes, kidneys, and throbbing headaches being relieved seems to point this way. Again a case with symptoms of angina pectoris has not had an attack since taking this treatment, and remains in a body machine with a temperature of 240° Fahr., for nearly an hour, though she cannot stand the ordinary home hot-air cabinet twenty minutes without fainting. The tendency to sleep in some patients, it seems to me, is due partly to the soothing effect of the heat and to an anæmic condition of the brain.

Perspiration is very active; the sweat was at first acid, then neutral and finally slightly alkaline in reaction; its specific gravity is increased.

There was but one case—chronic articular rheumatism with kidney complications—that did not sweat profusely during the first treatment. The action of perspiration in controlling the body temperature was prettily demonstrated here by the patient being unable to bear 160° F., whereas, if the sweat had been profuse she would have remained in the apparatus until the thermometer had registered 260° F. An ointment was rubbed over the body and the skin thereby much softened; after which there was an immediate improvement in the action of the sweat glands, and after the fifth treatment the excretion was as profuse as could be desired.

Many patients cannot drink cold water while exposed to a high temperature without getting cardiac palpitation or a heavy uncomfortable feeling in the stomach. These persons usually enjoy a cool drink after they are through.

A few cases of albuminuria treated for other troubles, showed marked improvement in all, and an apparent cure in one. All cases had organic lesions.

Several patients of a lithæmic tendency with acne of long standing were completely cured of the eruption in a few weeks.

Fuerst reports enormous increase in the epithelial cells and thickening of the epidermis with the formation of giant-cells by the action of heat at 50° C., applied locally to animals (III.). This is very interesting, showing how the dermal growth is stimulated, and giving a

probable explanation of its action in the chronic diseases of the skin, especially ulcers.

Miliary rashes develop frequently in nervous, 'gouty, and rheumatic patients with very acid perspiration, but usually disappear in a few days.

One case of very moderate epistaxis occurred after a treatment, in a lady past the menopause, suffering from gout. Temporary bradycardia was produced in a young woman with an arrhythmic heart and a very nervous temperament. The pulse went below fifty beats per minute after every treatment taken; otherwise she showed no unpleasant symptoms.

A sense of floating through air and flashes of light before the eyes, frightened one patient at the beginning of her first treatment. These symptoms soon passed away and since then she has suffered very little from the floating sensation, and none at all from the flashes of light.

Unilateral chromidrosis was noticed in a case that had had a hysterectomy performed some four months before. The patient stated that her underclothing had been stained black on the right side the night after her first treatment. There were no signs upon her face, but in the right axilla the pigment was very apparent.

All traces of colored sweat disappeared after four treatments. It may be of interest to know that this case had been on potassium iodide for some time before coming to see me and was suffering from a chronic inflammation of the right elbow-joint.

A peculiar case of marked cyanosis of one hand that had existed for many years in a young man with malaria was entirely relieved after ten treatments given every other day.

Several cases of hydrophobia have been reported cured by hot air at 127° F., by Buisson of Paris.

It has been stated by the same authority that vaccination in infants does not take if immediately after they are subjected to vapor baths.

To give a fair idea of the time needed and the results obtained, I append a few cases taken at random:

Case I.—Woman, æt. 52, chronic articular rheumatism, duration 22 years. Locomotion difficult for 20 years. Twenty-one treatments were given during a period of three weeks at the end of which she could walk and obtained painless use and control of all voluntary muscles.

Case II.—Man, æt. 50, had stiff wrist, exuberant callous and fibrous adhesions (radius and ulna) as a result of an old Colles' fracture. Four

treatments in an arm machine at 340° F., completely restored motions of wrist.

Case III.—Woman, 60, neuralgia and chronic interstitial nephritis and inversion of both feet in consequence of severe burning sensation on the soles of the feet. Ten treatments relieved painful affection of the feet and she was able to walk normally.

Case IV.—Æt. 39, sciatica two-months' duration. Completely cured in ten treatments.

Case V.—Woman, æt. 52, rheumatic gout, duration eight years; helpless for five years. Treatments daily for two months, after which she was able to walk without pain.

Case VI.—Woman, æt. 38, gout, duration 3 years. Stiffness and tophi in small joints. After four-weeks' treatment the patient was able to partially extend the legs and walk a short distance. Improvement in this case, though marked, was not satisfactory.

Case VII.—Woman, æt. 38, arthritis deformans, duration twenty-five years. Had had also rheumatic synovitis. Helpless eight years. Treatment for two months; has obtained control and ability to use volutary muscles to a slight extent. Can walk short distance without crutches. Treatment interrupted because marked anæmia developed.

Case VIII.—Woman, æt. 23, subacute articular rheumatism of one-month's duration. Stiffness and crepitation in both knees and one wrist. Ten treatments effected complete cure.

Case IX.—Woman, æt. 22, posterior dislocation of radius and ulnar with fracture of inner condyle of humerus. Fibrous ankylosis on inner side of humerus. Treatment: anæsthesia, adhesions broken, resetting. Hot-air treatment daily for six weeks. Result: absorption of callous and moderate motion of elbow regained.

Case X.—Woman, æt. 32, acute pleuritis of ten-hours' duration. One treatment completely relieved patient and caused disappearance of friction sounds.

Case XI.—Woman, æt. 38, fibrous ankylosis of knee from an old pyæmic joint. Duration one year. Four treatments at 312° F., effected complete cure.

Extravagant claims will often cause a good thing to be cast aside as worthless. There is no doubt that in the past and present some unreliable persons have made preposterous statements (unintentionally or otherwise) in reference to the extraordinary therapeutic qualities of hot air, especially if used in a certain indicated manner; and by so doing have caused a number of the medical profession to look with some suspicion on an agent which, if administered intelligently, will produce

excellent results in arthritis, certain skin, kidney, and nervous diseases where drugs alone would fail.

To conclude: I have found from my experience that superheated dry air is a very valuable therapeutic adjunct, and combined with intelligent medicinal treatment, it is certain to benefit most troubles where the circulation is poor or disturbed, the excretory organs sluggish, and the lymphatics not working properly.

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- ³ Fuerst, *Beiträge zur path. Anatomie*, XXIV., 3, 1898.

REVIEW.

The Mechanics of Surgery. Comprising Detailed Descriptions, Illustrations, and Lists of the Instruments, Appliances, and Furniture Necessary in Modern Surgical Art. By CHARLES TRUAX, Chicago.

This book occupies a field quite alone; it does not concern itself with the pathology or treatment of disease but aims to give an accurate description and illustration of all mechanical appliances valuable to physicians and surgeons. The history, construction, and care of instruments are briefly considered, then the mechanical aids to diagnosis, as the microscope, stethoscope, etc. Chapters follow upon the means of transportation of patients and upon hospital fittings; of especial value is the discussion of the various appliances of sterilization and the methods applicable to different articles. Instruments and contrivances of service in general practice, in minor and major surgery are next discussed at length, then those which belong to the special branches. Particularly detailed and valuable is the portion devoted to the appliances of orthopædic surgery. The book is well illustrated, containing some twenty-four hundred cuts, and while chiefly of value as a reference work, the information it embodies is difficult or impossible to gain elsewhere without a search through many text-books and catalogues, oftentimes resulting in a confused or inaccurate conception at the end.

THE THERAPEUTIC FORUM.

We again call the attention of our readers to this Department of the JOURNAL. It has been established in the interest of the subscriber that he may be provided with an honest and reliable *critique* of the drugs and the instruments which he may desire to purchase. Here again do we apply the scheme of medical co-operation, which we shall continue strenuously to urge upon the profession, and we throw these columns open to practitioners and solicit their independent criticism of all drugs and other therapeutic agents which appeal to their patronage. It has been impossible hitherto that any physician should obtain an opinion upon the value of any new preparation except by the desultory method of discussing it with some chance acquaintance who may have chanced to experiment with it. We have established a means by which physicians can communicate their experiences directly in an ethical manner and one which will place them above the possibility of adverse criticism or the reproach of self-interest. We are personally and editorially responsible for every word which enters the Therapeutic Forum and we have no fear that we shall ever be accused of lukewarmness in the defence of the honor of the profession or of lack of appreciation of its ethics.

We, therefore, ask all our medical subscribers to write us their experiences with any reputable drug or surgical instrument which they have used in a scientific way and we ask them to do this whether their judgment thus formed has been favorable or the reverse. We do not wish fulsome praises of any therapeutic agent—the manufacturer can supply that—but we do wish and earnestly solicit clinical facts from reputable physicians concerning its use. If the consensus of medical opinion is to the effect that any preparation or other agent is of therapeutic value, it is to the advantage of the profession that this fact should be brought to our attention in a reliable and ethical manner. If, on the other hand, the clinical experience of independent witnesses show that an agent is not what its manufacturers believe and claim that it is, it is of the utmost importance to our patients and to us that we should know the facts. (*Abstract from Editorial, December, 1897.*)

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ARE THE DANGERS OF THE MENOPAUSE NATURAL
OR ACQUIRED?—A PHYSIOLOGICAL STUDY.*

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In this country, the education of women is in its infancy.† The first *College* regularly organized for the education of women was Vassar College, which was incorporated in 1861, thirty-eight years ago. Mathew Vassar wrote: "It occurred to me that woman, having received from her Creator the same intellectual constitution as man, has the same right as man to intellectual culture and development. It is my hope to be the instrument in the hand of Providence of founding an institution which shall accomplish for young women what our colleges are accomplishing for young men."

The first medical college regularly organized for this special education of women, was the Woman's Medical College of Pennsylvania, incorporated in 1850, eleven years earlier. Thus it is seen that the need of the practical working education of woman was felt before that of her theoretical education. So the cart was placed before the horse; and the natural embarrassment caused by the awkwardness of the situation made itself sharply felt.

By the rapid multiplication of women's colleges, university extension, post-graduate courses, women's clubs, and travel, phenomenal changes have occurred in the education of the masses of women, and in the mind of the public concerning this change in the social status of women. Fifty years ago, all that woman knew of herself was what man told her, and the definition of a woman might have read thus:

*Valedictory Address read before the Alumnae Association of the Woman's Medical College of Pennsylvania. May 18, 1899.

†Galbraith, Anna M., "The Women of Salerno." Trans. Al. Assoc. W. Med. Coll. Penn. 1898.

"A woman is a generative apparatus whose function is to perpetuate the species. She has a limited intellect contained in a frail body which is especially liable to be wrecked at the time of puberty and the danger is still greater at the menopause."

As a matter of fact, the average woman does look forward with the gravest apprehension to "the climacteric," as an awful abyss that must be gotten over or fallen into, on her onward journey through life.

Since it is a well-attested fact that dangers do attend the menopause, the question is one of vital importance to every woman—are these dangers natural or acquired?

In order to reach any satisfactory conclusion we must consider: (1) The etiology of menstruation; (2) the physical changes which occur at the time of the menopause, together with the resulting symptoms; (3) the pathological conditions which may arise; (4) measures which may be taken in order to prevent a physiological process from passing into a pathological condition.

The Etiology of Menstruation has been variously explained at different epochs. The chief theories have been, that of plethora, the ovulation, the tubal, and the nerve theory.

First, the Theory of Plethora.—From the time of Hippocrates to 1835, the theory prevailed, "that in the female body the formation of blood is sufficiently rich to provide every four weeks for an overflow of the same, the evacuation of which becomes a necessity. It was believed that this excess of blood depended upon an excess of formative power in the woman."

Second, the Ovulation Theory.—This was distinctly formulated about 1845. It construed the menstrual hæmorrhage as a subsidiary phenomenon, entirely dependent on the periodical dehiscence of ovules. The changes supposed to take place in the Graafian follicles at each menstrual period were believed to involve a peculiar expenditure of nerve-force, which was so much dead loss to the individual life of the woman. The growth of the Graafian vesicle and its contained ovum was supposed to cause an irritation of the nerves of the ovary, which was reflected to the entire nervous system. According to Pflüger the gradual accumulation of this irritation, finally determined by reflex transmission the afflux of blood to the uterus and ovaries, which constitutes the catamenial flow.

The ovulation theory of menstruation was refuted by the following facts: Ovulation may and does occur without menstruation. Women who have never menstruated may conceive. Conception may occur

during lactation without the menses having returned since the last parturition. Children at birth have many ovules contained within the ovaries. Ovulation may persist for a time after the menopause and even pregnancy has occurred, although very rarely, after this time. The menses may continue regular after the removal of the ovaries and Fallopian tubes. This is exceptional, and, as a rule, the periods only continue for two or three years at longest.

Third, the Tubal Theory.—Lawson Tait thought that thorough removal of the tubes was far more essential in determining the menopause, and that cases of periodically recurring hæmorrhage after oöphorectomy were to be explained by the fact that the tubes had not been sufficiently removed. As an anatomical and surgical fact, the tubes can never be wholly excised unless the upper part of the uterus is also amputated.

Fourth, the Nerve Theory of Menstruation.—This is based upon the following views:

1. That menstruation is a process directly controlled by a nerve-center situated in the lumbar region of the spinal cord.
2. That the menstrual impulses reach the uterus either through the pelvic splanchnics, or the ovarian plexus; probably both.
3. That menstruation is the result of nerve irritation, vascular congestion, and subsequent relief of these by hæmorrhagic discharges.
4. That hæmorrhage from the uterus is either the result of a local uterine condition, or of influences outside the uterus acting directly on the center.
5. That removal of the appendages arrests menstruation by preventing the propagation of uterine impulses to the centre

According to the researches of Körner, Röhrig, and others, the uterus is supplied by two sets of motor nerves. The first are derived from the abdominal splanchnics and pass through the abdominal and hypogastric sympathetic plexuses to the uterus. Stimulation of these fibres causes contraction of the circular muscular fibres of the uterus. The second set of fibres are the pelvic splanchnics which arise in the lumbar part of the cord, in the cells of the posterior column of Clark, and are also connected with the cells of the lateral horn of gray matter.—Gaskell. They run in the nerve-roots of the second and third sacral nerves and pass directly into the hypogastric plexus, from which they are distributed to the generative organs, the bladder and the rectum. They are chiefly vaso-dilator in function—i. e., they transmit impulses which bring about vascular engorgement in the viscera supplied. It is probable, therefore, that they are concerned in bringing about the

determination of blood to the uterus and appendages, which is such a marked feature of the menstrual process.

Gaskell believes that active tissues are supplied by two sets of nerves, katabolic and anabolic. A katabolic nerve stimulates the destructive metabolism which is always going on in a tissue. It brings about a liberation of energy followed by exhaustion—*e. g.*, the motor-nerves of muscles, the accelerator nerve of the heart and the sympathetic nerve to the submaxillary gland. An anabolic nerve is the exact opposite to a katabolic in function. It subserves constructive metabolism, produces repair of tissue and building up—*e. g.*, the cardiac branch of the vagus and the chorda tympani.

Martin believes that in the intermenstrual period, the uterus is under the control of the anabolic nerves.

The uterus is believed to contain independent or parenchymatous nerve centres, which may be excited by suspension of respiration, anæmia, or rapid hæmorrhage—Körner, Spiegelberg. Automatic ganglia in the uterine mucosa connected with nerve filaments have been observed by Frankenhäuser. This observation is supported by Ries' experiments on bitches, which show that although all the nerves going to the uterus be divided, practically all the functions connected with conception, pregnancy, and parturition can take place, even with the uterus separated from its cerebro-spinal connections.

Active contractions of the uterus may be induced: (*a*) by direct stimulation of the hypogastric plexus—Frankenhäuser; (*b*) by stimulation of the pelvic splanchnics—Von Basch and Hoffmann; (*c*) by direct stimulation of the lumbar part of the spinal-cord—Spiegelberg.

The uterus may be made to contract reflexly: (*a*) by stimulating the central end of the sciatic nerve—Von Basch and Hoffman; (*b*) by stimulating the central end of the brachial plexus—Schlesinger; (*c*) by stimulating the nipple.

Uterine nerve-centre: the centre for parturition, according to Körner, lies at the first and second lumbar vertebræ; the afferent fibres come from the uterine plexus, to which also the motor fibres proceed. Goltz and Reusberg observed that a bitch became pregnant after its spinal cord was divided at the first lumbar vertebræ.

All the centres lying in the lower part of the spinal cord—*e. g.*, those for defæcation, micturition, erection, ejaculation, must, like the parturition centre, be regarded in the normal condition as subject to the control of higher reflex centres in the medulla. The experiments of Oser and Schlesinger confirm these observations. The cerebrum also, partly by the production of perceptions, partly as the organ of volition, can

excite or suppress the action of certain of these subordinate spinal centres.

The Menstrual Centre.—Reasoning from analogy, that the various pelvic functions are dominated by spinal centres, Mr. Christopher Martin argues for the existence of a menstrual centre situated in the lumbar enlargement of the chord. He pleads that as the parturition centre has been shown to exist in bitches, there is in all probability also a parturition centre in women, situated about the first and second lumbar vertebræ. If, writes Martin, the parturition centre be found there, the menstrual centre will not be far away. The centre is certainly not in the pelvis. There are ganglia in the substance of the uterus, ganglia in the nerve plexuses at the sides of the uterus between the layers of broad ligament, and on the cervix is situated a large ganglionic mass, developed in connection with the utero-vaginal plexus, called the *ganglion cervicale uteri*. If these ganglia have anything at all to do with menstruation they are certainly controlled by a higher centre.

James Oliver says: "It is, therefore, more than probable that the physiological changes recurring from time to time in the uterus are anticipated by and in reality the sequence of a molecular disturbance arising spontaneously in some centre located in the higher part of the cerebro-spinal tract, possibly somewhere in the medulla oblongata. All visceral activities are through habitation fulfilled in a somewhat automatic manner."

Dr. Arthur W. Johnstone of Cincinnati discovered the menstrual nerve, which he believes to stand in the same relation to the uterus as does the chorda tympani to the sublingual gland, or the sciatic nerve to the lower limb. "The closer you get to the uterine body with your excisions the more sure you are to stop menstruation; so also the more sure you are to extirpate the whole of the nerve plexus, embodied in the tube and broad ligament, thus completely isolating the endometrium from the trophic and vasomotor nerve, which control it as they do every other organ. This nerve comes up at such an acute angle with the body of the uterus from deep down in the broad ligament that one must get his ligature around the very origin of the tube if he expects always to secure it. It is probably a mixed nerve, being composed of cerebro-spinal and sympathetic nerves.

Napier says, there are several objections to this theory, the primary one is that the menstrual nerve has not been found by other competent observers.

Christopher Martin writes: "I doubt if this be as constant a struc-

ture as he would have us believe; it is probable that the ovarian structure contains some of the fibres governing menstruation."

Having made an exhaustive study of the uterine mucous membrane, Johnstone has come to the conclusion that it ought to be regarded as an adenoid or glandular tissue of like structure as the thyroid, spleen, tonsil, and lymph tissue in the walls of the intestine and lymphatic glands. He holds that in the ordinary acceptance of the term the endometrium is not a mucous membrane, but adenoid tissue, and that menstruation is for it what the lymph-stream is to lymph-gland or the blood-current to the spleen. Johnstone says (*Brit. Gynec. Jour.*, Vol. 2, p. 296, June, 1886): "Having satisfied myself that the corpuscles of the healthy endometrium are never found bifurcating, but that the developmental gradation is always present, I was convinced that the tissue belonged to that class of organs whose function it is to replace organic waste, and it ought to be classed with the spleen and thymus gland, instead of the vagina and bladder. Menstruation is a periodic wasting away of those corpuscles that are too old to make a placenta." He has further found, that as compared with the uteri of very many of the lower animals the human uterus is very scantily supplied with lymphatics, and the only way to rid the uterus of the over-ripe and consequently useless tissue is to wash it out through the vagina by a blood-stream. The tough walls of the human uterus and the increased blood-pressure caused by the erect position cause the difference between menstruation in the human female and rut in the lower animals. He endorses the statements of Engelmann that the mucous membrane is not destroyed and consequently does not need regeneration between each flow. Bland Sutton also holds the view that only the surface epithelium is shed during menstruation.

E. Tenison Collins says: "That uterine hæmorrhage, menstrual or metrorrhagic, is invariably caused by intra-uterine irritation acting reflexly through a nerve-centre. Physiologically we have proof of the existence of such a centre, and nerve filaments have been traced into the uterine mucous membrane. Foreign bodies are expelled from the uterus partly by expulsive contractions, partly by blood flux. In tubal disease hæmorrhage is common, but the tubes are embryologically part of the uterus. In all these diseases the chief afferent nerve conveying the impulses to the centre is probably Johnstone's nerve. Apart from the local causes of hæmorrhage the centre may, like all others, be affected by the quantity of its blood-supply, drugs acting on it, also, cardiac, hepatic, or renal disease.

He believes that the uterine mucosa undergoes progressive con-

struction for the reception and retention of the ovum. Failing this, having reached the highest stage of development, it degenerates and becomes a foreign body, and so acts as a stimulus generating afferent impulses to the utero-ovarian centre."

Christopher Martin says: "In the inter-menstrual periods, the organ is under the control of anabolic nerves, engaged in a constructive metabolism, preparing a decidua, building a nest for the expected egg. But should impregnation not occur within a definite period, the katabolic nerves exert their influence and menstruation occurs. The actively growing cells of the endometrium undergo a rapid, destructive metabolism, the fabric of the half-formed decidua tumbles to pieces, the turgid capillaries burst and pour out the menstrual flow, which sweeps away the useless débris." The irritant sets up reflex uterine contractions, and so the blood, according to Dr. Champnay, is squeezed out of the distended capillaries and washes away the degenerated cells.

Napier believes that the cause of the peripheral irritation is the increased size of the utricular glands, which press directly on the fine nerve-filaments and ganglia in the uterine tissue, also indirectly by filling up the stroma and pressing on the vascular radicles: possibly also by the influence of some special glandular secretion.

He says that the time necessary for the growth of the glands to such a size and probably with such functional activity that they will act as peripheral irritant factors, corresponds to the time during which the uterus is functionally at rest so far as menstruation is concerned. As the result of afferent nerve impulses, awakened or increased muscular action of the involuntary uterine fibres occurs; this also aids in determining the congestion which results in the breaking down of vessels.

Professor Stephenson has shown that menstrual life is associated with a well-marked wave of vital energy, which manifests itself in a monthly fluctuation of the temperature of the body, of the daily amount of the excretion of urea and carbonic acid and of the rate and tension of the pulse. The wave attains its maximum during the week preceeding menstruation and slowly falls to its minimum, which is reached the week after menstruation. This wave indicates a periodic variation in the bodily metabolism, and is probably directly influenced by the rhythmical activity of the menstrual centre. This observation would seem to be nullified by the fact that the phenomena referred to were found by him to occur in men as well as women, and that the lower animals also seemed to show the same periodic variations. He writes:

—"it is, therefore, evident that the phenomena belong not to the function of menstruation, but to a general law of vital energy."

Johnstone (A. W.) observes, that "the close of the nineteenth century will see the emancipation of the uterus from the thralldom of the ovary. For generations it has been taught that the ovary was the centre around which the woman revolved and that the uterus was a mere appendage to it. Now, however, we know that they are independent organs, each having a separate nerve control which centres back in the sympathetic plexus and the spinal cord. The greatest discovery which the century has seen is that of Stephenson's law. Without it, to-day the physiology of the productive organs would be in an inextricable tangle; it marks the same era for gynæcology that Harvey's discovery of the circulation of the blood did for general surgery."

Menstruation may, then, be defined as the periodical discharge of blood from the uterus, accompanied by the shedding of the epithelium of the body and fundus, as well as that of the utricular glands near their orifices. The sanguineous discharge is due partly to the oozing of blood from the surfaces denuded of epithelium and partly to active congestion. The discharge from the uterus is largely augmented by mucous secreted in increased quantity at this period from the enlarged utricular glands. The tubes take some part in the process of menstruation; their mucous membrane is swollen, the epithelium is shed in places and they are filled with a thin, bloody fluid containing blood-corpuscles and cast-off epithelial cells. The menstrual wave continues from puberty to the menopause. It is a nervous phenomena.

Ovulation is a progressive non-periodic process. It begins before birth and continues till the ovarian tissue is atrophied or worn out.

The Menopause.—The average duration of the menstrual function is from 30-32 years. Raciborski estimated the duration of menstrual life at about 31 years and 9 months. According to him, the mean age of puberty at Paris was 14 years and 7 months; therefore, the average age of the menopause was 46½ years. Tilt gives the average age of cessation of menstruation in 1082 cases as 45 years and 9 months. The average age is between 45 and 50 years. It has been shown by Krieger, Kisch, and others, that the earlier the menses appear, the later they cease, and *vice versa*. However, when the first period is unusually early or late, the menopause comes very early—also that the sexual function is usually abolished earlier in the laboring class, who are compelled to work hard and who have many cares, than in the well-to-do and rich.

Race does unquestionably influence the duration, but given a sound, healthy race, which is not too much enervated with civilization, and

the menstrual process will, equally with the total physical vigor and vitality, be increased. At the present day there is an increased sexual vitality, which shows itself in the fact that the duration of menstrual life has been increased three or four years during the past generation. The inference can be fairly deduced that vigorous vitality causes prolongation of the menstrual process and the actual age. Robinson believes that a prolonged menstrual life depends on a largely developed solar and hypogastric plexus, which indicate a large blood-supply as well.

By the menopause is understood the whole period from the beginning irregularities in the time of appearance of the menstrual flow until its actual cessation. The average duration of the menopause is two and a half to three years.

The menopause is a physiological and conservative process. It occurs at a time of life when all the tissues are most stable and the nutrition of the body at its best. Other physiological changes which occur at the same time are decrease in size of the spleen and lymphatic glands; Peyer's patches smooth down and lose their peculiar structure; the intestinal villi shrink and become less vascular; the muscular coats of the intestine atrophy and lessened peristalsis ensues. These are not the degenerations of age, but the blood-supplying, blood-making, and blood-elaborating organs of the body have completed the growth of the organism, done their work, and are striking a balance with the needs of the economy.

The object of each metamorphic, or developmental, epoch is a critical readjustment of the organism, in order to insure the greatest possible amount of health for each subsequent period of life. In the vast majority of cases this object is quietly effected, but sometimes the constitution only rallies after having been severely shaken for a varying period.

General Phenomena of the Menopause.—Börner states that while many women pass this period without noting any change in their former condition, and are conscious of the occurrence of the change of life only by reason of the absence of the menstrual flow, others suffer for years with a host of troubles.

One of the most essential changes is that of the woman's psychical condition. From slight vagaries, loss of interest in the daily affairs of life, to melancholia and insanity.

"Two factors are generally taken into account; first, the sudden cessation of the menses; second, the reflexions of the patient caused by her condition, meditations on the loss of youth and sexual power, and

anxiety in view of the dangers of the climacteric. It cannot be denied that there is some truth in the supposed sad thoughts about the beginning of old age and the depression caused by them can scarcely be considered abnormal."*

Napier believes it is extremely rare for the cessation to occur without some physical discomfort or some disturbance of the nervous system, but adds that "some women, however, cease menstruating with very slight inconvenience." As a rule, the woman misses one, two, or more periods, then a menstruation of almost normal quantity and duration, and this is again repeated at gradually longer intervals and with a diminished flow, until actual cessation occurs.

The periods cease owing to the degeneration and disappearance of the glandular tissues of the uterus, and secondarily to similar changes in the ovaries and other glands. This is followed by an involution or atrophy of all the structures of the genitalia.

An increase in the size of the uterus, from increase in the amount of blood, is frequently noticed at the beginning of the menopause; later it becomes smaller in all its dimensions. The wall becomes thinner, the os internum smaller, and is often even obliterated. The cervix becomes shorter and thinner, sometimes hard, sometimes flabby as a membrane. But the distinguishing feature of the menopastic uterus is atrophy of the endometrium. The large bundles of tissues are lacking, the whole membrane is thinned and wasted, the fibrillated structure is disappearing, the corpuscles are few and the utricular glands are lessened in size and number.

In consequence of the removal of these features of peripheral irritation, the nerve-centres cease to receive afferent stimulation and after a given period, longer or shorter, and attended with more or less functional disturbance, cease to functionate.

The changes in the uterus and Fallopian tubes are earlier than those in the ovaries, so that ovulation, though lessened in activity, may persist for a considerable time after menstruation has ceased. Ovarian atrophy has been referred to senile rather than menopastic changes.

Atrophy of the ovaries occurs very gradually. Puech found in one case that the ovaries were of normal size three years after the establishment of the menopause. Kiwisch describes the structural change in this gland as consisting on the one hand of an increase of the connective-tissue stroma from the periphery towards the centre, the gradual hypertrophy of which results in the destruction of the epithelial elements and on the other hand the Graafian vesicles themselves undergo

* Börner.

retrograde change. In consequence of these microscopical changes, which take place very slowly, the entire organ becomes harder and smaller.

Napier believes that the ovaries secrete certain specialized substances which aid in determining menstruation; and that in a less degree the utricular glands and the glands of the Fallopian tubes share in this action. He considers that this is probably secondary to the chain of peripheral irritation from the uterine glands, and the resulting afferent-nerve impulses and efferent-nerve currents; but that this secretion is not the less an essential feature of the menstrual process.

In support of this view he calls attention to the pigmentation of the skin which occurs during pregnancy and chlorosis, showing that the absence of the catamenia results in the retention in the blood of some substance which would normally be excreted at this time.

Other atrophic changes of the genitalia are, shriveling of the vulva, with prolapse of the vagina or uterus from relaxation of the ligaments and loss of the natural support afforded by the changed perineal body.

Uterine catarrh occurs almost invariably and only ceases in advanced years. Displacements of all kinds are frequent, but on account of the now greatly diminished weight of the uterus, these are insignificant.

The vagina is at first almost always hyperæmic. This disappears as the vessels successively atrophy, but it takes place much sooner in some spots than others, hence the characteristic appearance of dark-red spots a pale ground. The vagina gradually becomes narrower and shorter. The mucous membrane loses its rugæ and presents a pale, grayish, blanched hue.

The researches of Byron Robinson,* made by the dissection of a number of old women, show that after the menopause not only is there an atrophy of the genital organs, but the hypogastric plexus also shrinks away. "It becomes smaller and firmer, and no doubt some strands disappear. On this fact must be based the pathological symptoms accompanying the cessation of the menstrual function. In dissecting infants which have lain in alcohol for some six weeks, the opposite condition of the hypogastric plexus may be observed, for in the young child the hypogastric plexus is disproportionately large and can be very plainly dissected out."

The importance of the genital organs is shown by the vast nerve-supply sent to them, and also because the hypogastric originates in great central sources; the solar and renal plexus and the lateral chain

* Amer. Med. Ass., 23, 345-351, Chicago, 1894.

of the sympathetic. When this great nerve-tract becomes atrophied so that it can no longer transmit the higher physiological orders, all parts of the sympathetic system must be unbalanced, until a new line, the next line of least resistance, is established. And Robinson believes that this is the explanation of the many pathological manifestations of every viscus at the menopause, that is: "The irritation which arises by trying to pass more nervous impulses over plexuses than normal gives origin to what is unfortunately known as functional disease. It is just as organic as any disease, only we are unable to detect it."

Chemical changes in the blood and tissues are constant vital phenomena; increased oxidation causes increased activity of the circulation, increase of temperature, increase of urea and carbonic acid in the economy from the retrograde changes, and finally during menstrual life the flow of blood from the uterus carried off the effete materials from the highly charged system.

The elimination of albumenoids, as shown by the altered condition of the blood after menstruation, is greater than can be accounted for by the blood discharged. When the menopause is attained suddenly the retention of such albumenoid substances must act toxically. Hence the resulting clinical fact that sudden cessation of the menses is in the majority of cases, attended with pronounced symptoms of discomfort, and it is in these cases that untoward results are most likely.

James Oliver believes that the catamenial flow eliminates from the body substances whose presence in the blood would exert a deleterious influence on the animal economy.

The Prominent Symptoms of the Menopause.—Christopher Martin holds that the symptoms of the change of life are produced largely by a condition of instability and increased excitability of certain other cerebro-spinal centres directly brought about by failure of the menstrual centre, and adds: "It is probable that the ovaries, like the liver and thyroid gland, modify the blood circulating through them, and add to the blood some peculiar product of their metabolism. It may be that some of the climacteric symptoms are due to the loss of this substance from the system."*

Arthur Johnstone's theory of the symptoms of the menopause is, the endometrium atrophies and becomes old cicatricial tissue, and like all other adenoid structures it sinks into quiet decay. The nervous system begins to readjust itself, but no longer having free outlet through the soft, lymphoid tissues of the uterus, the wave-pressure meets with resistance and a choppy sea results. Vertigoes, bilious attacks, etc.,

* *Brit. Gynec. Jour.*, vol. 9, 271, 1893.

are nothing more than reflex waves. The weakest organ of the individual is the one that generally suffers. And that the kidneys, which all along have borne the brunt of life, should now show positive signs of Bright's disease is natural.

The etiology and pathology of the menopause lie in the sympathetic or ganglionic nervous system. And it is by breaking up of the harmony of previous processes that nervous disturbances are produced.

After the cessation of the flow, over eight per cent. of women suffer from "flashes," which is caused by the irritation of the heart and vasomotor centres. The blood-vessels of the head and neck seem to be most affected, yet the skin of the whole body shares in the disturbance. The nerve-impulse, which should be emitted along the hypogastric plexus, is abnormally forced along other plexuses, and the vasomotor centre becomes irritated, resulting in the dilatation and contraction of the peripheral vessels. All molecular action generates heat, and it may be that much of the heat experienced may be due to the rapid dilatation of the vast number of vessels and the rapid flow of fresh blood in them. Besides the vasomotor and heat-centre being disturbed, the sweat-centre is irritated. The flushes and flashes are followed by various degrees of sweating, which varies from a slight moisture to great drops.

Nervous irritability is a prominent symptom in eight per cent. of women at the time of the menopause. Most of the pain arises around the stomach, that is, the solar plexus. Digestive disturbances are very common at this time.

The effects on the individual viscera can readily be understood by noting how the irritation can pass up the hypogastric plexus to the solar plexus, and, being reorganized, be transmitted to the digestive tract. When the irritation reaches the digestive canal by way of the gastric, superior and inferior mesenteric plexuses it first affects Auerbach's ganglionic plexus of nerves, which lies between the muscular layers of the gut wall. This simply disturbs peristalsis and may produce some colic. But as irritation passes on to Meissner's plexus it disorders secretion, which is controlled by this centre. Irritation of Meissner's ganglia may produce excessive secretion, diarrhoea, or, deficient secretion, constipation; or disproportionate secretion, fermentation. Disturbances of the liver are caused by the irritation passing from the solar plexus to the liver, inducing excessive, deficient, or disproportionate secretions of bile, glycogen, or urea.

Tilt holds the view that the too strong reaction of the sexual organs on the central ganglia is their principal cause of disease. Puberty, menstruation, pregnancy, lactation, or the menopause almost always

entail some derangement of the ganglionic system which is sometimes sufficiently severe to lead to insanity and suicide. Debility underlies all ganglionic affections, in the same way as nervous irritability underlies all cerebral diseases. Sometimes there is an overpowering sense of exhaustion pervading the whole system.

Forms of climacteric insanity are delirium, mania, hypochondriasis, melancholia, irresponsible impulses, and the perversion of moral instincts.

"If the reproduction apparatus does not act on the brain by the instrumentality of the circulating organs of the blood, it must do so by means of the nerves. The genital apparatus is richly endowed with ganglionic nerves, and I have shown how frequently evident signs of disturbance in the ganglionic centres coincided or alternated with headaches, nervousness, hysteria, and epilepsy. What wonder, then, if the same powerful influence of the sexual organs, through the instrumentality of the ganglionic nervous system, should at times produce a permanent derangement of the mental and moral faculties. I am thus led to look on the ganglionic nervous centre as a course of vital power producing reflex morbid phenomena, in accordance with variable cerebral predisposition." (Tilt.)

Another very frequent symptom of the menopause is *tachycardia*. It may be caused by the condition of the blood, whether it be impoverished—*anæmia*—too rich in red globules or fibrin; by reflex irritation of the pneumogastric or sympathetic nerves; by over-exertion; or by alcoholism.

Clement believes that the tachycardia of the menopause is due to general debility; the woman resists fatigue less easily and she experiences a general malaise. To the palpitations are rapidly added syncope, distress, and shortness of breath. The sleep is troubled with præcordial distress.

Baldwin says that women in whom the menopause occurs early are more liable to tachycardia than those who menstruate until later in life. And that it occurs with especial frequency when the menopause has been prematurely induced by surgical operation or by disease.

Kisch concludes that tachycardia is due to the hyperplasia of the stroma of the sexual organs, and says that this increase in connective-tissue fibres acts in some unknown way upon the terminal fibres of the sympathetic.

Baldwin suggests that it is equally probable that tachycardia may be due to the formation of scar-tissue at the seat of a cervical laceration, especially as it has sometimes been promptly and permanently

cured by removing the cicatricial tissue and suturing the wound.

Nothnagel, who has studied this subject with great care, stated that whatever the cause may be it acts in some cases by stimulating the sympathetic and in others by producing a transitory paralysis of the inhibitory fibres of the pneumogastric.

Perhaps the most alarming symptom of the menopause is hæmorrhage. It may be due to general or local causes. Among the general causes are cardiac, pulmonary, splenic, and renal diseases. Local causes of hæmorrhage are: endometritis, chronic pelvic inflammations, faulty uterine positions, erosions and ulcerations of the os, glandular polypi, fibroid tumors, and cancer. All competent observers agree that cancer in women is much commoner from forty to fifty years than at any other age.

Hæmorrhages occupy the foremost place among the pathological phenomena of the genital tract during the menopause. Scanzoni thinks that in many instances they are due to the senile rigidity and friability of the uterine vessels, which are not in a condition to offer sufficient resistance to the blood-pressure which is brought to bear on their walls. According to Kisch, the hæmorrhages of the menopause are due to softening and relaxation of the uterine tissue. Additional causes are found in the circulatory disturbances in the pelvic organs, and obstruction of the vena cava inferior, whereby the outflow of blood from the pelvic vessels is hindered and a chronic stasis in the uterine walls is produced. The same author in another place quotes from Peter Frank, who attributes it to early and profuse menstruation, frequent and difficult labors, frequent abortions, and excess in drinking.

In many cases the hæmorrhages seem to be the expression of vasomotor disturbances, such as those in other regions which frequently characterize the menopause. The third and last variety include those cases which may be referred to some disease of the pelvic organs themselves.

Anatomical changes may lead up to pathological conditions. A chief feature characteristic of uterine disease is malnutrition from atrophy. A sudden curtailing of the blood-supply from the degeneration of the genital-nerve apparatus and consequent impaired vitality of tissue from defective nourishment. Ulcerative surfaces, local death and purulent secretions arise from low granular-cell formations. The anatomical changes in the glands and substance of the uterus also favor the irritation or the development of malignant and benign neoplasms—*e. g.*, cancers, fibromyomata, etc.

A most annoying and obstinate symptom is pruritus.

Glycosuria of the menopause is likely to attract attention first through an obstinate form of pruritus vulvæ. Eckhard contends that the phenomena of glycosuria are irritative rather than paralytic, be that as it may, hyperæmia of the liver is the result by which sugar is thrown into the system and eliminated by the kidneys. Pary has advanced a chemical theory to explain the action of hyperæmia in producing glycosuria. He considers that in healthy digestion the carbohydrates—starches and sugars—are converted, not into glucose, but into maltose, which is absorbed and assimilated and converted into glycogen. For the proper production of maltose and its assimilation, a good, venous blood, producing a maltose-forming ferment is necessary. When hyperæmia of the chylo poëtic viscera exists the blood reaches the liver too little deoxygenated and a glucose-forming ferment is produced. The glucose not being assimilable, passes off into the circulation and is excreted by the kidneys. It is quite possible that this is due to the altered circulatory conditions of the menopause.

The last pathological condition which we will mention is kidney disease.

Le Gendre believes that the menopause exerts a deleterious effect on the kidneys: whether this be a congestion followed by a diminution in the quantity of the urine, or a sort of auto-intoxication due to the retention of a poison in the system that has been prevented from leaving by the ordinary path. And that this is especially so in women of a neuro-arthritis diathesis.

Armstrong says that in almost all cases at the time of the menopause the amount of urine passed is below normal, that the specific gravity is increased, and that the urine contains urates and almost always uric acid in excess. Further, that the functions of digestion and assimilation and the various metabolic changes are so largely under the control of the nerve-centres that nothing seems more likely than that so great a disturbance of that system as takes place at the menopause should cause secondary derangement of these most important functions. That being so, the blood becomes loaded with waste-products and the usual symptoms follow, gout, etc.

Having considered the etiology of menstruation; the physical changes which occur at the time of the menopause, together with the resulting symptoms; and certain pathological conditions which may arise; there remains only to consider what measures may be taken in order to prevent a physiological process from passing into a pathological condition. Or, in other words, *are the dangers of the menopause natural or acquired?*

Tilt has reached the conclusion that "The best way to avoid the dangers of this critical time is to meet its approach with a healthy constitution. A marked want of strength prevents the regular succession of the vital phenomena, by which all critical periods are carried on. And as the change of life is marked by debility, when this is grafted on constitutional weakness, loss of power will be of long duration. All complaints remain chronic because there is not stamina enough to carry them through their stages."

Dusourd, whose practice lay in an agricultural district in the south of France, as well as Tilt, believes that peasant women suffer little at this period. Their health is generally good when the menopause comes on and they are little liable to nervous disorders. The poor of large towns suffer much at this epoch. The necessity of working hard, the anxieties of poverty, and their unhygienic surroundings. But by a fortunate compensation, the necessity for working hard prevents or cures the nervous affections which so often assail the rich at this period.

Tilt's cases showed that women who suffered much at the menopause had previously suffered at puberty and at the menstrual periods. And among thirty-nine cases where there was no suffering at the menopause, there was the same immunity from suffering at puberty and at the menstrual epochs.

In forty-four cases of my own, all women past the menopause, the age of the first menstruation was as follows:

One at 10 years.

One at 11 years.

Three at 12 years.

Eight at 13 years.

Thirteen at 14 years.

Eight at 15 years.

Five at 16 years.

Three at 17 years.

One at 18 years.

One at 21 years.

Making the average age of the first menstruation 14 years and 4 months.

In a list of forty-nine cases, the age of the actual cessation of the menstrual flow was:

Three at 40 years.

One at 41 years.

One at 42 years.

Two at 44 years.
Five at 45 years.
Three at 46 years.
Two at 47 years.
Five at 48 years.
Four at 49 years.
Six at 50 years.
Five at 51 years.
Four at 52 years.
Six at 53 years.
Two at 55 years.

Making the average age of the actual cessation of menstruation at 48 years $5\frac{2}{3}$ months. Subtracting from this the average age of the first menstruation, 14 years and 4 months, we have as the mean age of menstrual life, 34 years $1\frac{2}{3}$ months. That is, the average duration of the menstrual function was from two to four years longer than that usually given.

A further investigation in order to ascertain any possible relation between the age of marriage and the number of pregnancies to the sufferings of the menopause elicited the following statistics. In a list of 39 cases the age of marriage was:

One at 16 years.
One at 17 years.
Two at 18 years.
One at 19 years.
Two at 20 years.
Three at 21 years.
Seven at 22 years.
One at 23 years.
Three at 24 years.
Four at 26 years.
One at 27 years.
Three at 28 years.
Two at 30 years.
One at 31 years.
Two at 32 years.
One at 35 years.
One at 38 years.
One at 42 years.
One at 46 years.

One at 47 years.

Making the average of marriage 25 years and 10 months.

In a list of forty-eight married women, of the four who were married after thirty-eight years all were sterile; of the remainder:

Six each gave birth to 1 child.

Eleven each gave birth to 2 children.

Eight each gave birth to 3 children.

Five each gave birth to 4 children.

Seven each gave birth to 5 children.

Four each gave birth to 6 children.

One gave birth to 7 children.

One gave birth to 9 children.

One gave birth to 10 children.

Giving an average of slightly above three children each.

The number of miscarriages in the same list of forty-eight women was as follows:

Twenty-nine had no miscarriages.

Fifteen had each one miscarriage.

One had two miscarriages.

One had three miscarriages.

One had four miscarriages.

One had seven miscarriages.

That is, 40 per cent. of all these patients had one or more miscarriages.

In a list of forty-two cases, nine had habitually suffered from severe dysmenorrhœa, eleven had slight dysmenorrhœa, and twenty-two never had felt the slightest inconvenience.

In a list of fifty-two cases, all of whom had passed the menopause, five were perfectly healthy and had never suffered the slightest inconvenience. Of these one was single and only one had had one miscarriage. Ten had suffered at the time of the menopause from slight malaise, but not sufficiently to call in a medical attendant. Thirty-seven were more or less seriously ill; thirty of these needed local as well as constitutional treatment, and seven constitutional treatment only.

The prominent symptoms of the climacteric in a list of fifty-two cases were as follows

Marked debility.....	24
Intense nervousness.....	31
Neurasthenia	9
Melancholia	10
Headache	14

Neuralgia	6
Hysteria	7
Irritable heart.....	11
Tachycardia	8
Insomnia	19
Indigestion	32
Constipation	28
Diarrhoea	3
Leucorrhœa	38
Rheumatism	21
Gout	1
Bright's disease.....	12
Hæmorrhage	6
Alcoholism	2
Corpulency	2

As a result of the study of these cases, the most striking feature was the relation of miscarriages to the sufferings and ill health at the time of the menopause. Of the nineteen women who had miscarriages only one did not suffer in some way at the time of the menopause. Four suffered only slightly and fourteen suffered extremely not only during the menopause, but in the post-climacteric period as well. And secondly that the prominent symptoms of the menopause are pre-eminently reflex or the functional diseases of the nervous system.

Tilt believes that single women suffer less than other women at the time of the menopause. He writes further, "As at puberty, from the ignorance in which it is still thought right to leave young women, so at the change of life, women often suffer from ignorance of what may occur, or from exaggerated notions of the perils that await them. It would be well if they were made to understand that if in tolerable health, provided they will conform to judicious rules, they have only blessings to expect from the change of life. Most unfortunately, the individual not cognizant of the invisible changes going on in the economy, does not adapt the mode of life to the new conditions of the organism, and the weakened and lessened amount of the digestive fluids are unable to master the large quantities of food. The absorbents refuse to take more than is needed to repair the tissues. The atrophying muscles of the digestive tube unable to hurry on the mixed products of indigestion, fermentation, and micro-organisms inciting fermentations and elaborating toxic alkaloids, poison and disorder the functions of life. Man's outdoor life enables him to escape many of these evils.

Woman's enervating mode of life, the continued introspection,

coupled with the peculiar changes in the nutrition of the body at this time, render the nervous system peculiarly impressionable and liable to the manifold forms of diseases. While "the woman is told that she must be patient and calm and time the tomb-builder will alleviate all her sufferings." This critical period may be dangerous to those who are always ailing, for habitual sufferers at the menstrual periods and for those affected with uterine diseases. If, on the first indication of the change of life, women who are in fair health carefully followed a regimen and pursued a line of life in harmony with the physiological processes on which this change depends, disease would be prevented. But as the change concerns a natural function, it is left to Nature; no additional precautions are taken, and advice is only sought when the mischief is done.

It is not wise to marry during this period. On the first appearances of the irregularities of the menopause, the amount of food and stimulants to which women have been accustomed should be curtailed rather than augmented. The system requires supporting by medicine and regimen rather than stimulating by spirits. Baths, mental, and moral hygiene, and occupation.

From the foregoing physiological study we have seen that according to the plethoric theory which prevailed until 1835, and to the nerve theory, which is based on the latest anatomical and physiological researches, that menstruation is a physiological process to get rid of effete material, and is, therefore, an excretion.

At the end of perhaps thirty years, by a conservative process of Nature, the child-bearing period ceases and the organism is readjusted to the end that the woman's vitality may all be conserved for her own individual life.

Each metamorphic or developmental period of life, dentition, puberty, and the menopause, throw a special strain on the nervous system, and the recent studies of the sympathetic system at the time of the menopause show that very extensive anatomical changes occur at this time. That being the case, the woman must lead such a life as will insure her having on hand a large reserve force, necessary to meet those heavy demands. Tilt's observations show that women who have experienced no suffering at puberty or at the menstrual periods do not suffer at the menopause. It is, therefore, evident that the time to begin this preparation is in childhood.*

That single women suffer less than married women would suggest the occurrence of lesions as the results of pregnancies many of which

* Anna M. Galbraith, "Hygiene and Physical Culture for Women."

lesions could have been prevented or cured by the timely aid of the physician.

That the most frequent and serious disturbances are those of the nervous system, and that from their mode of life and habits of introspection the rich suffer more from these ailments than the poor, must cause serious consideration of the physiological necessity for a definite occupation for the daughters as well as for the sons of the rich.

The frequency with which Bright's disease is found at the time of the menopause is dependent not so much on the local physiological changes which are taking place as on the time of life. Loomis says, it was not until life-insurance examinations became so common that the frequency with which kidney disease existed in persons who believed themselves well, was even imagined. And as the result of his observations in these cases and of a large number of autopsies conducted at the Bellevue, he stated that it is his belief that 90 per cent. of men and women over forty years of age suffer from some form of Bright's disease. That being the case, it would seem that after this period of life at least as much attention should be directed to the kidneys as to the teeth, and a semi-annual examination of the urine should be made.

The recently acquired knowledge of the therapeutic action of the thyroid and other gland extract favors the belief of a special gland secretion, which would suggest that gland extracts given in certain morbid conditions would aid in restoring what is lacking in the system, until the economy has become accustomed to effect the necessary metabolism independently. Fosberg advises for vasomotor disturbances, flushings, etc., 5 gr. palatinoids of ovarian gland.

That if gynæcologists should watch women as carefully through the menopause as obstetricians now watch women through pregnancy that even to that class of women liable to suffer, much of the sufferings and many of the dangers would be averted and the woman would be prepared to enjoy a healthy and useful post-climacteric period of life.

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AN ADDITION TO THE ENUCLEATION METHOD OF OVIOTOMY, HYSTERECTOMY, ETC.: BROAD LIGAMENT FORCEPS USED AS TEMPORARY HÆMOSTATICS, LEVERS AND TRACTORS WHILE THE ENUCLEATION IS PROCEEDED WITH.—ILLUSTRATIVE CASES.

BY J. COPLIN STINSON, M.D., C.M., SAN FRANCISCO, CAL.

Pratt¹, of Chicago, some time ago, described a new method of vaginal hysterectomy, which he called "vaginal hysterectomy by enucleation without clamps or ligatures." "The uterus¹ is enucleated from its peritonæal and areolar investment without injury to the vascular supply, the vessels being pushed aside as they lie imbedded in these tissues, and the loss of blood is trifling."

This method is spoken of by Baldy and Dorland² as nothing more than a revival of Langenbach's operation. Edebohls³, in writing up the several methods of vaginal hysterectomy, called the enucleation operation with ligation of bleeding vessels only, Pratt's method, as he considers it justly bears that name. My earliest paper on hysterectomy, entitled "the treatment of fibro-myomatous uteri, requiring hysterectomy by a confined vagino-abdominal method of enucleation with the individual ligation of bleeding vessels only,"⁴ was published in the *New York Medical Record*, July 20, 1895. In this article I described in detail the technique of enucleation.

In the *Therapeutic Gazette*⁵ May, 1896, in a paper on "the treatment of retroposed uteri, choice of operations, etc.," I reported three cases of vaginal hysterectomy by enucleation, with, when necessitated, the individual ligation of bleeding vessels; all three recovered." "In two⁵, the operation was not difficult, but in the third the uterus and adnexa were so fixed by dense and firm adhesions that the operation was slow, tedious and difficult, yet in this case, only one artery required ligating." In this instance, on account of loss of distinct landmarks, the enucleation was not carried as close as it should have been to the uterus. If the dissection had been carried closer to the uterus, etc., I am sure that not a vessel would have been cut. "The patients⁵ were allowed to sit up by the tenth day, and the results were satisfactory. I think⁵ that in those cases where the uterus is very firmly fixed, with cervix very high up and not to be drawn down, one should proceed as in vaginal hysterectomy to circumcise the cervix. Separate the

uterus by enucleation from below as high as possible, and then when it is found that the uterus cannot be drawn down, in place of prolonging the vaginal operation, an incision should be made in the median line above the pubes and the enucleation with removal of tubes, ovaries and uterus thus completed."

In 1896 I had opportunities of applying the enucleation method without ligature, clamp or cautery, etc., in the removal of ovarian cysts, tubo-ovarian abscess, etc., and on December 8, 1896, I presented before the San Francisco County Medical Society, specimens of tubo-ovarian abscess, ovarian cyst and tube removed, without ligature, clamp or cautery⁶, etc. These were, as far as I can find out from a study of the literature of the day, the first specimens of ovarian cyst, tubo-ovarian abscess, etc., that have been removed without ligature, clamp or cautery, etc.

In an article published in the *New York Medical Record*, February 13, 1897, on this subject, I stated that, "At times enucleation is difficult, *e. g.*, when the pedicles are short, deeply located in the pelvis and cannot be easily controlled, when the broad ligaments retract quickly, when the operator cannot . . . keep close to the tumor, when the broad ligaments are thickened and very vascular, when the organs are fixed by adhesions and in most cases where the uterus is removed either by vaginal, abdominal or combined vagino-abdominal method of enucleation. Under these circumstances the operator should first separate the adhesions when present, then enucleate the mass so as to expose the pedicle which is clamped. . . . The clamps are, under these circumstances, an addition to the enucleation method, and when applied to the pedicles act temporarily as a prophylactic against hæmorrhage, . . . at the same time using them as levers and tractors, the pedicle is readily controlled," while the enucleation was proceeded with.

In the *New York Medical Record* of August 7, 1897, in an article on "vaginal hyster-salpingo-oophorectomy by enucleation with the individual ligation of vessels only for puerperal metritis intramural abscess, etc.," I reported a case of hysterectomy in which I had used broad ligament forceps as temporary hæmostatics, levers and tractors. "The enucleation⁷, which was somewhat difficult on account of the friability and size of the uterus, was facilitated by using long forceps as temporary hæmostatics, levers and tractors, what I call an addition to the enucleation method. Long forceps were clamped successively on the broad ligaments close to the uterus while the latter was from time to time separated from the former by blunt dissection, aided at times by cuts with the scalpel keeping very close to the uterus. By making

slight traction on the severed portions of the broad ligaments using the forceps as levers and tractors the cut edges could be brought well into view so as to inspect the stumps for open mouths of vessels, which were clamped with small forceps and ligated with fine catgut. Three arteries were ligated during the operation, then the clamps were removed."

In this case, on account of the size, friability, vascularity, etc., of the uterus, etc., it was difficult to enucleate the uterus, etc., without severing vessels. Probably with more experience in such or somewhat similar cases, I shall be able to keep closer to the uterus, etc., and thus avoid the severing of vessels that require clamping and ligating.

In an article in the *American Gynecological and Obstetrical Journal*^a, October, 1898, on "Ovariectomy, etc., without ligature, clamp or cautery, etc., for ovarian cyst, tubal abscess, etc., illustrative cases, by both vaginal and abdominal routes," I stated my objections to the clamp methods, mass or serial ligation, cautery methods, and the method of ligation of the vessels in the pedicle. I further stated the reasons why I preferred the enucleation method without ligature, clamp or cautery, etc., aided at times, when the enucleation was difficult, by using long forceps as temporary hæmostatics, levers and tractors while the enucleation was proceeded with.

The objections to other methods and the preference for the enucleation operation applies with as much force in hysterectomies as in ovariectomies, etc.*

I report some additional cases of ovariectomy and hysterectomy, etc., which illustrate well the points of the enucleation method when aided by broad ligament forceps used as temporary hæmostatics, levers and tractors, while the enucleation was proceeded with.

Case I.—Endometritis, dysmenorrhœa, left ovarian cystoma, right ovarian cyst.

Treatment.—Dilating of cervix; curetting, irrigating and gauze drainage of the uterus; abdominal cœliotomy; left ovariectomy, by enucleation without ligature, clamp or cautery, broad ligament forceps used as temporary hæmostatics, levers and tractors while the enucleation was proceeded with. Excision of half of left Fallopian tube, excision of right ovarian cyst with suture of the ovary.

M. F., age 22 years; general health good, began to menstruate at 13 years of age; since second period, always painful, so severe that she averaged one and one-half days in bed each month. Lots of times she was in bed three days, and all usual remedies were used without much relief. She always had slight vaginal discharges. In June, 1898, she

* See *American Gynecological and Obstetrical Journal*, October, 1898.

began to complain also between periods, pressure symptoms, frequent desire to micturate, at first this was not severe, but later on she had to urinate every hour or so. Pain across lower abdomen and sacrum, and some nausea and sickness to the stomach. The patient was under the care of Dr. D. A. Beattie of Santa Clara, Cal., and I saw her in consultation with him in April, 1899. Dr. Beattie had made a diagnosis of ovarian cystoma with adhesions, and with this I concurred. On April 24, 1899, assisted by Dr. D. A. Beattie of Santa Clara, I made operation. Ether was administered by Dr. J. U. Hall of San José.

The cervix was dilated, uterus curetted, irrigated and a strip of boric gauze introduced into uterus. An incision two and one-quarter inches long was made above the pubis slightly to one side of the median line, and the structures of abdominal wall including peritonæum incised. The fundus was located and drawn upward with double tenaculum—the right ovary was irreparably diseased and contained a cystoma the size of a large cocoanut. An aspiration was used, and the fluid drawn off and then cystoma pulled to the surface with double tenaculum, and after separating some adhesions, ovariectomy by enucleation without ligature, clamp or cautery, etc., was performed. As the enucleation was somewhat difficult on account of the deep location of the cystoma and the shortness of its ligament the work was facilitated by applying to the ligament two forceps, which were used as temporary hæmostatics, levers and tractors. The cystoma was enucleated, using blunt dissection, aided at times by cuts with a scalpel, keeping very close to the cystoma, which was removed without cutting a vessel; the cut edges were inspected, but no vessels were found, so they were sutured at once with continuous stitches of fine catgut (chromicized). The left Fallopian tube was elongated to twice the normal, the length appearing to involve the outer one on half the tube. This portion was excised, enucleation being used without ligature, etc., and a few continuous sutures were inserted to bring the cut edges together; the proximal or other half of the tube was left, as it appeared normal. The left ovary contained a cyst, the size of a walnut, this was evacuated and excised and the cut edges of the ovary united with continuous stitches of fine chromicized catgut. The ovary was thus reduced to about two-thirds the normal size. The forceps were now removed from the ligament of excised ovarian cystoma, and as there was no evidence of bleeding the sutured edges, etc., were returned to the pelvis. A tear on the fundus of the uterus, produced by the traction of the double tenaculum, was closed with three continuous catgut sutures; the pelvis sponged out and the abdomen closed in separated layers with

buried tendon sutures without drainage. The cut edges of peritonæum were sutured with fine chromicized catgut, the skin with fine silk without drainage. The post-operative treatment was carried on by Dr. Beattie. The wound healed by primary union, the silk stitches were removed on the seventh day, and afterward collodion was freely applied. The patient was up and around fifteen days after the operation. She menstruated for the first time five weeks after the operation, the flow continued seven days, the quantity lost appeared to be normal in amount, but for three days there was considerable pain across the lower part of the abdomen, during which time she remained in bed. At other times she had no pain or other symptoms referable to the abdomen, appetite good, and bowels regular. On June the 9th, 1899, she began to have some soreness at the upper angle of the scar, and on June the 12th something like a blood blister formed, this she pressed with the fingers till it opened and about thirty drops of blood stained fluid escaped. I saw her on June the 14th, and examining the wound found a small vesicle which contained a few drops of serum, which was evacuated with thumb forceps. Aristol, a small piece of gauze and a strip of adhesive plaster was applied. The wound was dressed twice a week and healed solidly by July 6th. She menstruated for the second time June 28th, she had no pain, and the flow lasted about three days and appeared normal. She is quite well and has gained ten pounds in weight since the operation.

Case II.—Appendicitis, endometritis, retroversion with extensive adhesions, double salpingo-oöphoritis (chronic) with adhesions, right dermoid cyst of the ovary with extensive adhesions.

Treatment.—Excision of the appendix. Abdominal cœliotomy, separation of some adhesions and closure of wound by buried absorbable sutures; anterior and posterior cervical incision and exploration of pelvis, vaginal hysterectomy, left salpingo-oöphorectomy; incision, evacuation and gauze drainage of dermoid cyst.

M. R.—Age 42 years; widow; married in 1881; average weight, 135 pounds. Family history, neurotic; previous history, indisposition for three or four years. No miscarriages; no bladder trouble at any time. Attacks of localized pain, etc., in the right side at intervals of a month or longer. The attacks lasted usually several days. Severe attacks would last three or four days, and when the bowels moved freely there was a lessening of the pain and gradual recovery. She was under the care of Dr. Beattie of Santa Clara, and on June 12, 1898, she was again taken with severe pain, which was located in the right iliac region over an area the size of the palm of the hand, and the pain was most severe

at-McBurney's point. This pain lessened with the application of ice-bags and internal medications, but did not go away when the bowels moved, as in previous attacks. Temperature ranged from 101-103½ degrees. Pulse 100-120. There was a sudden change for the worse on the ninth day, with extension of the area of tenderness and increase of temperature.

I saw the patient in consultation with Drs. Beattie and Wright, June 23, 1898. She was in a weak condition, with the symptoms and local signs, etc., as already described. An anæsthetic was administered by Dr. Wright of San Jose, and, with the assistance of Dr. Beattie of Santa Clara, I made operation June 23, 1898. An incision about one and one-quarter inches long was made over the normal side of the appendix, and in a line which followed the trend of the fibres of the external oblique aponeurosis, which was divided in the direction of its fibres. The subjacent muscles were separated in the direction of their fibres, and the peritonæum opened; the appendix and cæcum presented all the evidences of peritonitis, and the appendix was bound down by adhesion at its tip. The adhesions were separated and the appendix was brought to the surface.

Its mesentery was separated by dissection well down to the cæcum. I found it necessary to clamp and ligate a couple of bleeding vessels with catgut, after which the cut edges of the mesentery were approximated with continuous catgut sutures. The appendix was held up by the tip, and "after" dividing in a circle the peritonæal and muscular coats of the appendix about one-quarter of an inch from the appendico-cæcal junction, leaving the lymphoid and muscular coats uncut, dissect back to the cæcum, with the handle of a scalpel, the divided serous and muscular coats of the appendix. Next apply a narrow-bladed forceps transversely to the mucous cylinder close to the cæcum to temporarily close the opening at appendico-junction, then cut off the appendix close to forceps, leaving only a small cuff of mucous membrane protruding beyond the outer edge of forceps. Cleanse the cuff with a gauze pad wrung out of 1-1000 bichloride solution; then suture cut edges of mucous membrane and lymphoid coats very closely together with fine silk on a fine needle." In this case I used fine chromicized catgut. "Dis-infect" united edges and line of suture with aristol; remove forceps and suture accurately the peritonæal and muscular coats which have been dissected back to cæcum." In this case I used a single row of fine chromicized continuous catgut sutures.

The method above described can be done quickly "only" sufficient mucous membrane and other coats of the appendix are used to close

accurately the opening in the cæcum at the appendico-cæcal junction, without leaving any tension on the line of sutures, and after suturing is finished there remains simply a line of sutures on cæcal wall at the former location of the appendix." This is the method I use as a rule in appendicitis cases when the appendix is excised, and the edges can be sutured in two layers.

The cut edges of the peritonæum were sutured with fine chromicized catgut and each of the other layers of abdominal wall were also sutured separately and accurately, using chromicized tendons, while the skin was closed with fine silk sutures without drainage. Recovery was rapid; highest temperature after the operation was 101 degrees; after the third day the temperature was normal. The wound healed by primary union, and the patient was up and about shortly after the removal of the silk stitches. Examination of the interior of the appendix after the operation showed two areas of ulceration on its inside.

I saw M. R. again September 8, 1898; she was complaining of pelvic symptoms, some vaginal discharge, pain in the back and above the pubes in ovarian areas. She also passed considerable mucous in the stools. With a careful examination (chloroform being administered to relax the patient's abdominal muscles, etc.). I made a diagnosis of endometritis retroversion with adhesions and fibroid of the uterus, and with this the consultant agreed. The mass considered to be fibroid was located low down on the right side of the pelvis, was the size of a large cocoanut, unmovable, apparently solid, and firmly attached to the right side of the pelvis, the right cornu and posterior wall of the uterus. On September the 9th she began to menstruate.

On September 13, 1898, chloroform was administered by Dr. G. Gross by the drop method, and with the assistance of Drs. Beattie, Glazer and Kastendieck I made operation. An incision about two inches long was made above the pubes, dividing slightly to one side of the median line the skin, subcutaneous tissues, fascia, rectus and peritonæum. On introducing the fingers the omentum and the intestines were found adherent on all sides to the appendages and the uterus. The fundus uteri could not be felt, so the adhesions on the right side were separated so that this mass could be partially made out and examined. The adhesions were so firm and intimately adherent everywhere that it was with much difficulty and danger to adjacent structures that they were separated. Deep fluctuation could now be detected in the mass in right side. On account of the extent and toughness of the adhesions, the presence of fluids in the mass, the dangers of injury to adjacent structures, and the probability of not being able to remove

it from above on account of its immobility and deep location, etc., in the pelvis, I decided it would be safer to attack the mass via vagina. So the abdominal wound was at once closed in separate layers, using chromicized catgut for the peritonæum, tendon for the muscles, and fascia and fine silk for the skin without drainage.

She was placed in the lithotomy position and an incision made behind the cervix. I endeavored to open into the mass, but could not do so. An incision was made in front of cervix, but mass could not be satisfactorily dealt with. It was opened, but only a small quantity of fluid (sebaceous) and shreds could be brought away. Vaginal hysterectomy by enucleation was at once performed. Long forceps were at times clamped on broad ligaments and used as temporary hæmostatics, levers and tractors while the enucleation was proceeded with, and, when completed, they were removed. Using blunt dissection with the fingers, aided at times by cuts with a tenotomy knife, the uterus was removed without severing a blood-vessel. I now attempted to excise the adherent dermoid cyst of right ovary and the accompanying Fallopian tube. I worked very hard and long to remove these, but they were so firmly and universally adherent that at this time I could not excise them, as the danger to life was too great. The cyst, which had been freely opened, allowing of escape of about three-fourths of a pint of sebaceous-mucous material, was cleansed and then packed with gauze. As the patient was now quite weak, and as every second counted, the adhesions of left tube and ovary were separated, their pedicle exposed, a long clamp applied, appendages quickly cut off, and clamp left on pedicle. The pelvis, the cut edges of the broad ligaments and vagina were lightly but systematically packed with gauze, finally the bladder was emptied and an occlusion pad of gauze and T binder were applied. She was put to bed and stimulated with hypodermics of whiskey, strychnine, ether and camphorated oil, etc.; rectal injections of coffee; subcutaneous injections of hot saline solution, etc.; limbs were rubbed and bandaged in wool, etc. She reacted well. On September 16 at 11 A.M. I removed the clamp which had been left on pedicle of left tube and ovary. At 7 P.M. the bowels moved from cathartics, and when an enema was given part of it passed from the rectum into vagina. No more enemata were given, and the vagina, etc., were cleansed, dried and fresh gauze introduced into cyst, etc. On September 29th she passed gas and some fecal matter via vagina. Up to October 25th the gauze was occasionally stained with fecal matter. The abdominal wound healed by primary union, and the silk stitches were removed on the eighth day.

On October 19th she was put on a sofa, and on November 25th she went on a trip to the country. From this time on, much against our wishes, she kept on her feet. During this time some flatus was occasionally passed through the fistula till July, 1899, when the fistula closed and no gas, etc., has since passed through her vagina. Her general condition is good, health excellent. She weighs more than she originally did when she was in excellent health; she has no flushing, no discharge, bowels regular. Examination showed the presence on the right side of the pelvis of a hard, immovable mass of the thickened tube and the remains of adherent cyst wall. She had no pains except low down in the right side of the pelvis and in the back over the same area. This was as difficult and hard a case as one will ever meet with and operate upon successfully.

Case III.—Diagnosis: Profuse and frequent menstruation. Endometritis. Retroversion with extensive firm adhesions. Collection of fluid (sero-purulent) in former area of left tube and ovary. Cyst size of a large hickory-nut adherent to uterus near the left cornu.

Treatment.—Vaginal hysterectomy by enucleation without ligature, clamp or cautery, etc., aided at times by broad ligament forceps used as temporary hæmostatics, levers and tractors while the enucleation was proceeded with. Evacuation of sero-purulent fluid, removal of serous cyst adherent to the uterus near left cornu; gauze packing and drainage.

M. H.—Widow; married at 16; had three miscarriages inside of three years; one at about full term, child dead; another at six weeks, and still another at three months. None of these were criminal. She always had painful and profuse menstruation, lasting from eight to twelve days; had complained for years of excessive vaginal discharges; persistent headaches; constant backaches, pain across the lower abdomen; had several attacks of peritonitis and felt utterly wretched. She had been curetted three times. In April, 1897, she came under the care of Dr. T. J. Knudson of Chicago. At that time she weighed 114 pounds. In May, 1897, laparotomy was performed by Dr. Knudson. Adhesions were separated, tubes and ovaries removed, and uterus curetted. She was in bed six weeks, and three weeks in a reclining chair. Weight after getting up was ninety-five pounds. In October, 1897, she weighed 114 pounds, and in March, 1899, 151 pounds. She improved somewhat, but continued to menstruate as freely as before. For a long time the pain was less, but by April, 1898, there was as much pain as ever. In August, 1897, she began to suffer again with pains in her back. She was again put under anæsthetics and a collection of fluid on the right side of the pelvis was evacuated through a vaginal

incision; the wound was drained and packed with gauze. She felt fairly well after she was up and around, but soon she felt just as wretched as before, except that the pains above the pubes were slight compared to what they had previously been.

I saw her in March, 1899. Her general condition was good. She was extremely nervous, had hot flushes about once a day, felt wretched. Complained of headaches, backaches, profuse frequent and painful menstruation, pain across the lower part of the abdomen, and had excessive vaginal discharges. She was so ill that she could not follow her occupation. Examination showed endometritis; uterus somewhat enlarged, fixed, retroverted and firmly bound down by adhesions to the rectum. A thickened mass about the size of an orange could be made out in the area of excised left adnexa.

On April 11th, 1899, I made operation, assisted by Dr. Dudley Tait. Chloroform was administered by the drop method. The uterus was removed by enucleation without bleeding up to within two inches of the cornua of the uterus, a long forcep was then clamped on the broad ligaments on each side close to the uterus, the uterus was freed completely by blunt dissection, aided at times by cuts with a tenotomy knife, keeping extremely close to the uterus. The cut edges were examined for open mouths of vessels, and none being found the edges on each side embraced in the forceps were at once sutured with fine continuous catgut stitches, the pelvic cavity was sponged, and finally the forceps were removed and the sutured edges allowed to retract. As there was considerable oozing from separated adhesions, especially where uterus had been firmly adherent to the rectum, etc., the pelvis was systematically and firmly packed with gauze strips, more strips were lightly packed in the vagina, occlusion pad and T binder applied, and patient put to bed. Recovery was uninterrupted, she was catheterized twice at ten-hour intervals, and afterward she urinated voluntarily. Vaginal gauze was removed in twenty-four hours. Some of the pelvic gauze was withdrawn in forty-eight hours. Loose gauze strips were replaced, the walls fell together rapidly, and healing was complete by May 3d, 1899. She returned to her occupation May 8th. She feels first rate, general condition good, and has no pain, no vaginal discharge or other symptoms referable to the abdomen or pelvis.

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INVERSION OF THE UTERUS.

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Inversion of the uterus is of such exceeding rare occurrence that it were well if every case observed were reported, if perchance some new light might be thrown on an old and yet little known obstetric accident.

In the clinics of Braun and Spaeth not a case of complete inversion occurred in 250,000 births, while in the Dublin Rotunda it was observed but once in 191,000 deliveries. It can thus be seen that it is one of the rarest of obstetric accidents. If any other proof were needed than that mentioned above the writer might adduce the fact, which he has taken pains to verify, that many men with large obstetric practices have gone through their professional life without having seen even one case.

The following statistics from private practice are presented as being of considerable interest and not a little value.

Of ten physicians in the city of Detroit, all doing large obstetric practices, and several confining themselves to that specialty and its congener gynæcology; all men of twelve to thirty-five years of professional experience, and whose aggregate years of practice reached one hundred and eighty-nine, or an average of about nineteen years each:—Of these

ten physicians it has been ascertained by careful inquiry that the total number of cases of inversion seen by all of them was seven.

Of the ten, six had never seen a case, three others had seen one each, all in consultation, while one, an obstetrical consultant of very wide practice, had seen four.

It is to be regretted that it was not possible to ascertain the exact number of obstetrical cases attended by the physicians in their one hundred and eighty-nine years of practice, as it would greatly enhance the statistical value of the record, but it was found impossible to obtain this information without a great deal of work on the part of the various physicians in looking over many years of case-books, and this they naturally objected undertaking.

While, however, the statistical value of these figures is somewhat lessened by this fact, we may consider this much proven: First, that the experience of private practice is confirmatory of hospital practice in regarding this as one of the rarest of obstetric accidents; second, that the condition of uterine inversion occurs with considerably greater frequency in outside than in hospital obstetric work. The reason for this is probably not hard to discover. In hospital work labor in any of its stages is never hurried, while in outside practice the needs and exigencies of the busy and often over-worked physician, with many patients clamoring for early attention, often demands that the physician conduct his cases with the utmost expedition consistent with safety. Sometimes the shadowy border line between expedition and safety is passed and then inversion or some of the other numerous obstetric accidents is liable to occur. Then again the physician in general practice, with but a comparatively small obstetric clientele, and with the fear of post-partum hæmorrhage ever before his eyes, is very prone to practice the Credé method of placental expulsion early in the third stage of labor and to continue the abdominal massage and pressure for some time afterwards. In fact, I believe it is considered classic teaching by most of the collegiate obstetricians when advocating this latter procedure before their classes, and it is, I believe, a method of preventing post-partum hæmorrhage almost universally taught in the colleges to-day.

Given, then, these factors above enumerated, with a condition of laxness or inertia of the uterus so often present in the parturient woman, and we might almost wonder that this complication does not occur much oftener in private practice than statistics would indicate.

In concluding this short paper upon this interesting subject I wish to narrate the history of a case which it was my privilege to see re-

cently. On the 28th of May last I was called in consultation with my friend, Dr. A. L. McGough, to aid him in the delivery of a primipara æt. 23. I found that Dr. McGough had spent six hours with the patient, who was a well-formed and healthy young woman, and whose case seemed to be progressing at first naturally and satisfactorily. For two hours and a half, however, before I was summoned, progressive pains had ceased. On examination I found the os moderately well dilated, the amniotic sac presenting, and the presentation L. O. A. The conditions being favorable, we decided to immediately apply the forceps. This was done under chloroform anæsthesia and the child delivered from the superior strait carefully and without difficulty or laceration. No sooner was this accomplished, however, than a hæmorrhage set in sharp enough to demand prompt attention, and the placenta was consequently delivered quickly by the combined method, though the traction on the cord was of the lightest character. This failed to stop the hæmorrhage despite the apparent contraction of the uterus, and while Dr. McGough was securing a hot douche for its hemostatic effect, I myself made a rapid digital examination to ascertain if by any chance, or mischance, there had been a laceration of the os and a rupture of the circular artery. The examining finger was barely within the vagina when I discovered to my mingled horror and interest that I had stumbled on a case of uterine inversion; for right ahead of me lay the thick wall of the fundus projecting well through the soft and flabby os, and from this surface was pouring the life stream. To discover was to act, and without much difficulty the examining finger, transformed into an operating finger, was able to force the fundus well up through the os. The structure then being almost beyond my reach, and Dr. McGough having arrived upon the scene with the hot douche, I seized the nozzle and forcing it upwards while Dr. McGough held the douche-bag at a height of eight feet, the combined force of the nozzle and the extruding streams of water quickly replaced the organ into its natural position. There it remained without difficulty, with all hæmorrhage stopped and with the patient considerably exhausted, but ready to make (as she did) a rapid and uninterrupted recovery.

Had our interference not been prompt it were appalling to contemplate the dire results which would have overtaken our patient, while the happy outcome of suitable remedial measures was all that could have been desired.

I wish to allude particularly to the method of reduction, which, from all I can learn through published cases, is unique. I refer here to the use of the douche nozzle with the force of several streams of

water applied from a height. In cases of inversion seen early, before the fundus has extended too far through the os, it would seem to me like an ideal treatment.

As a possible etiological factor it may be added that this patient was suffering from, and was being treated for secondary syphilis.

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THE TECHNIQUE OF ANTISEPSIS AND ASEPSIS IN GYNÆCOLOGICAL SURGERY.*

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In this short communication on the technique of antiseptis and asepsis, applied to gynæcological operations, we have not the intention of discussing the question in its relation to the improvements brought about in the operative technique nor the various methods employed to-day. Our object is simply to describe the methods that we have employed for about a year relating to the antiseptis and asepsis of the operator, his assistants and patients, in as concise a manner as possible. After this we will say a few words on suture material, antiseptic gauzes and dressings in general.

We believe, and it is our firm conviction, that asepsis *alone* can never give such brilliant results as when it is combined with an antiseptic technique, and for the last few years we have always employed the mixed method.

Regarding the operator and his assistants we must consider the four following points, namely: (1) the sterilization of the hands; (2) the care of the nails; (3) the use of gloves, either rubber or cotton, and (4) the preparation of the beard and hair. We would here remark that for no matter what operation in gynæcology, whether it be by the

* Read before the Congrès Periodique international de Gynécologie et d'Obstétrique, held at Amsterdam, August 8-12, 1899.

abdominal or the vaginal route, two assistants are quite sufficient; one of them helps us directly with the operation, while the second takes care of the sutures, sponges, instruments, etc. We usually allow the anæsthetic to be given by an experienced nurse. The fewer directly connected with an operation, the surer will be the asepsis.

Preparation of the Operator's and Assistants' Hands.—In the first place, the hands and the arms well above the elbows are thoroughly scrubbed with hot water and green soap for ten minutes, and during this time the water in the basin is changed four or five times. We wish to insist most particularly on this point that during the process of scrubbing the water should be frequently changed. We employ rather large, very cheap nail-brushes, which are sterilized for an hour before using them, and they are never used for any number of times. After scrubbing the hands and the forearms, they are washed thoroughly with ether; after this they are scrubbed in alcohol at 90° and afterwards in a $\frac{1}{2000}$ solution of sublimate. The sublimate is then removed by rinsing them in sterilized water. It is hardly necessary to add that the brushes used for scrubbing with alcohol and sublimate have been sterilized.

Regarding the care of the nails we can only repeat the very wise advice of Kocher and our former master, Kummer of Geneva, to keep them trimmed so short that no nail remains to be cleaned. We are convinced that if this precaution were taken many unfortunate results in the healing of wounds would be avoided, and on this question there are very few surgeons, even of wide experience, who consider it either theoretically or practically.

Regarding the *use of rubber or cotton gloves* during an operation we have little to say, excepting that in our practice we have practically given them up after having tried them. But their use is absolutely indicated when making vaginal or rectal examinations, or when a dressing is to be made on infected and septic wounds, or when operating for pus cases. In aseptic, plastic operations we occasionally wear cotton gloves, but this is done more for convenience than with a view to obtaining a more perfect asepsis. We feel very certain that even the most careful surgeon may, without knowing it, transport infected material coming from vaginal or other discharges, and that the simple washing of the hands does not remove this septic matter. Consequently for the past few months we wear rubber gloves during vaginal and rectal examinations, and we order them to be worn by the nurses who are caring for infected wounds or septic cases.

As to the *toilet of the beard and hair*, we believe that operators gen-

erally do not give it the attention it deserves, and according to our way of thinking many cases of post-operative infection may be attributed to an infection from the beard or hair during an operation. In order to avoid as much as possible this source of infection we wear a linen cap, to which is attached a small bag, which completely incloses our beard, mustache, and mouth. It is hardly necessary to say that these two objects have been sterilized along with the operating gowns.

Preparation of the Patient.—Since every operation performed by the abdomen may require some complementary operation on the vagina or on the cervix, all our patients are prepared as if they were to undergo a vaginal operation. The genital organs and the pubis are shaven with care. The vagina is then carefully washed with ethereal soap, after which all trace of the soap is removed by an abundant irrigation of sterilized hot water, and the toilet is completed by an irrigation of a $\frac{1}{2000}$ sublimate solution or with a $\frac{1}{3000}$ solution of citrate of silver. We never pack the vagina with antiseptic gauze preparatory to operating, as is advised by a certain number of authorities, particularly the French gynæcologists.

The abdomen is treated as follows: It is first thoroughly scrubbed with ethereal soap, which is carefully removed by the free use of ether; a scrubbing with alcohol at 90° is followed by the application of a compress dipped in a solution of sublimate at $\frac{1}{3000}$, and the whole is kept in place by an abdominal binder. We have entirely given up the use of alcohol and ether in the cleaning of the vagina, because these two bodies have appeared to us to be far too irritating to the mucous membrane. When the patient is placed on the operating-table we repeat the same cleansing of the skin of the abdomen and the vagina.

We have always found it a useful practice to render the intestine in as antiseptic condition as possible, and we have used betanaphthol at the dose of 25 centigrams four times a day for four or five days before the operation. We think by this means that the virulence of the bacteria inhabiting the intestine is to a certain degree inhibited. When the urine is purulent we obtain a relative antisepsis of the genito-urinary tract by the administration of urotropin given at the dose of 50 centigrams four or five times a day, and this practice has certainly been of value, especially when a vaginal hysterectomy or an operation on the vagina or bladder is to be performed.

The day before the operation the bowel is emptied by calomel given at the dose of 3 centigrams every quarter of an hour until six doses have been taken, and the last dose is followed up two hours later by 20 grams of phosphate of soda.

We now come to the consideration of the sterilization of suture material and ligatures. For tying the large vessels we use a medium-sized twisted silk and never a braided silk, because the latter, we believe, is very subject to slip along the vessel-walls and consequently a post-operative hæmorrhage is to be feared. We prepare our silk by boiling it for a half an hour and from the water we place it in a $\frac{1}{2000}$ solution of lactate of silver, where it is left for one week. At the end of this time it is removed and placed in sterilized glass-jars, which are left in the sunlight for forty-eight hours. The action of the sunlight produces a chemical transformation in the lactate of silver, resulting in the formation of a layer of metallic silver on the outside of the silk. For suturing or tying off the broad ligament, and for all sutures used for plastic operations on the vagina, or for the buried sutures in the abdominal incision, we employ catgut prepared by formolin as follows: We select the best commercial catgut of only medium size, and after it has been wound on spools of suitable length, it is placed in a $\frac{4}{100}$ solution of formol for forty-eight hours. It is then removed and washed in running water for six hours. The spools are then dried and placed in a drawer. Then, before the operation, they are thrown into boiling water and allowed to boil for fifteen minutes, after which they are placed directly in absolute alcohol. For Emmet's operation or amputation of the cervix we prefer a fine chromicized catgut prepared according to Lister's method, and which is afterwards sterilized in a dry heat at 130° for one hour on two consecutive days. This fine chromicized gut holds very well for eight or nine days, which is a sufficiently long time to obtain a solid union of the operative wound.

For all other operations on the vagina, whether it be a plastic or anterior or posterior colpotomy, we employ the formol catgut, and if for any reason there should be an indication for a vaginal douche during convalescence an irrigation of a $\frac{1}{200}$ solution of formol will render the vagina antiseptic and at the same time will prevent the catgut from dissolving with too great a rapidity.

For the closing of the cutaneous incision and the subcutaneous cellular tissue, we employ an intradermic suture of formol catgut in the case of thin subjects in order to avoid the lower layers of the epidermis, which, as we know, contain the staphylococcus albus in considerable quantity and perhaps other organisms as well, which the most careful mechanical and antiseptic cleansing will fail to reach. But when the subcutaneous cellular tissue is very greatly developed we have given up the intradermic suture because it has appeared to us that union per primam is exceedingly difficult to realize in fat subjects

when this suture is used, and under these circumstances we employ an interrupted metallic suture, either with a wire made in Switzerland which is composed of a combination of aluminum and bronze, or else fine virgin silver wire. Both of these may be tied in a knot like silk and are very easy of manipulation. The silver wire is simply sterilized by boiling it with the instruments, but as the aluminium and bronze wire is rendered brittle by moist heat we sterilize it in a dry heat at 130° for an hour on two consecutive days.

Regarding antiseptic gauzes to be used for tamponing the vagina or other cavities, we employ certain bismuth salts exclusively, because they can be sterilized in steam without undergoing any chemical change, they are very weak in their toxic properties even when employed in large quantities, and, lastly, they are odorless. Iodoform or iodol gauze we only use in tubercular lesions. The three bismuth salts to which we give our preference and with which we have very largely experimented are xeroform (tribromophrenate of bismuth), carbolate of bismuth, and subgallate of bismuth. Our antiseptic gauzes contain 20 per cent. of their weight of one or the other of these salts.

It must be said that in operative work we have very few occasions for the employment of these gauzes, excepting in cases of vaginal hysterectomy or when we wish to drain a pus cavity by Miculicz's method. We would say in closing this article that in order to obtain a thorough and antiseptic draining of collections of pus within the pelvis, the vaginal route in our opinion is very far superior to the abdominal route. We do not wish it to be understood that we consider vaginal hysterectomy the treatment of choice in dealing with pelvic suppuration in general, because we believe that posterior colpotomy is destined in the future to be employed both as a *conservative* and a *curative* intervention.

From the first of October, 1898, to the first of July, 1899, we have performed seventy-four gynecological operations and we only have to report a single unsuccessful result, and still in this particular case we very much doubt if the complication which occurred was due to any fault in our antiseptic technique. We have performed eighteen abdominal laparotomies (it is understood that we are here only speaking of the laparotomies performed for lesions of the female genital organs), six of which were for fibroid tumors of the uterus, two for ovarian cystoma, and ten for inflammatory lesions of the adnexa. We have performed twenty-one posterior colpotomies, eleven times for suppurating peritonitis limited to the pelvis, four times for unilateral lesions of the adnexa, three times for emptying hæmatoceles, and three times for

the section of the utero-sacral ligaments, followed by Alexander's operation in cases of marked antifixion of the uterus combined with a retroversion of the organ. Five vaginal hysterectomies, according to Doyen's method, four of which were performed for epithelioma of the cervix, and once for a severe gonorrhœal metritis. Emmet's operation we have done fourteen times, and in nine instances this operation was followed by a plastic operation on the perinæum, on the anterior vaginal wall, or both. Nine curettements of the uterus for infections localized to this organ. Six Alexander's operation for simple, moveable retroversion, and one case of closing a vesico-vaginal fistula, completes our modest list of gynecological operations performed within the last nine months.

In all these operations, with one exception, every patient has had a perfect convalescence, and the operative result has been as nearly perfect as possible. The case presenting the complication referred to was that of the gonorrhœal metritis, in which the uterus was removed by vaginal hysterectomy after long and vain attempts to affect a cure. The clamps were removed in forty-eight hours, and the patient left the hospital eighteen days after the operation in a very satisfactory condition, excepting that she complained of some pain on the left side, which could not be accounted for by a careful digital examination. About four weeks after her discharge from the hospital we were sent for to see the patient, who had suddenly developed symptoms of a rather severe generalized peritonitis, due to the rupture of an abscess, which we think had formed in the left broad ligament. The patient was operated on by one of our colleagues through the abdomen, from which a very little serous pus was evacuated, a large quantity of thick mucopurulent pus being evacuated through the cicatrix into the vagina, and as far as we are aware the patient has since made a good recovery.

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EDITORIAL.

THE GREATEST NEED OF THE AMERICAN PROFESSION.

We have had occasion many times to point out to our readers the specific needs of the profession and in every case we have shown, with perhaps tiresome but necessary reiteration, that the absence of these factors in the healthy growth and progressive usefulness of our science, in its application to the welfare of our fellow-citizens, was due to disorganization in our own ranks. Owing to the spirit of disunion and the absence of co-operation among us not only are we unable to apply adequately the knowledge we possess but the advance of knowledge, the progress of scientific research itself, is hampered and held back by this very lack of opportunity and official encouragement and the want of organized centralization of individual effort.

Taking the profession at its own valuation, what is our professed function in relation to society? Are we not the exponents and the guardians of the public health? Does the term "guardian of the public health" imply merely the duty to treat cases of individual sickness when they are presented to us? or does it demand the larger and greater responsibility to prevent disease by the discovery and authoritative enforcement of those protective surroundings which conserve health and obviate the effect of disease-germs, in both the ordinary and extraordinary course of human life under civilized conditions? If this be not so, in what are we better or nobler than our fore-runners

of the middle ages—half charlatan and half eclectic? If our duty be merely to provide remedies, at a fixed price, for the diseases of individuals, to profit by the distress and travail of our fellow-men, are we not in effect but human jackals watching greedily for the weakness and the fall upon Life's trail that we may rush in and batten? Is this the noble aim of Medicine?

Our first duty and the greater, then, clearly being to conserve health and to protect life, how do we practice it? Our conservation of the public health, in peace, consists in the establishment of local Boards of Health, each independent of each, and presided over by a physician placed in office by the influence of local politicians. In no way responsible to the profession of which he is a member, his tenure of office depends upon his ability to escape the ill-will of the influential local contractor, the influential plumber, the Street Cleaning Commissioner and all the "boss politicians" who feed from the public crib. Therefore, he must be a man whose fitness for office depends upon the political influence he possesses; he is rarely, if ever, one of note through his scientific attainments or, when he first takes office, of training or experience in the special study of hygiene. In times of public stress we supplement the work of the Health Boards by writing, as individual physicians, to the newspapers and giving our individual and unauthoritative views upon the proper management of the situation, thereby deriving more or less profitable personal advertisement. If any of these private suggestions are ostensibly good, the Health Board is forced, by public clamor, to adopt them—and the situation is saved! This is the careful and scientific method pursued by the profession for the conservation of the public health in time of peace. In war, the health and lives of those who fight for us are theoretically protected from disease by a physician appointed politically on the Staff of the Secretary of War and called the Surgeon-General. In practice, his duty is to procure and forward necessary supplies of drugs and surgical equipments to the army surgeons and to receive whatever reports from this source may be forwarded to the Adjutant-General. He may also make recommendations on the strength of these reports and they are approved or not, according to the judgment of his lay superiors in grade in the War Department and in the Field. His orders to medical officers in camp and in the field are carried out only if they meet with the approval of the officer commanding or are supplemented by a specific order from the Adjutant-General. Upon the fundamental condition for health among the troops, namely the situation of camps, with their water supply, availability for "sinks" and the destruction of garbage, he

is not apparently considered competent to pass, for all this is removed from his sphere of action. Engineers and Inspectors-General report upon such matters and the Secretary of War decides upon these reports. Owing to these enlightened methods of hygiene under lay auspices, at the late camp at Chickamauga, where forty thousand men were stationed, the water supply for many thousands of these had to be carried, by whatever regimental facilities existed, *three miles*. This naturally was for drinking purposes; bathing, even limited washing, for most of them was out of the question. The ground for a great part was impassible, eighteen inches below the surface, to anything less powerful than a drill and dynamite. Very few "sinks," therefore, were dug and the excrement of nearly all of this large number of men was deposited on the surface of the ground. In Camp Alger, with even its limited number of troops, excrement was likewise deposited upon the ground and the filth and misery of the men in consequence thereof were indescribable. In camp at Tampa water was everywhere struck a few inches below the surface and "sinks" were impossible. It was a frequent sight to see particles of excrement floating through the streets of the camp. Is it remarkable that typhoid fever and dysentery prevailed in our camps? and is it not an absurdity to talk of medical supervision of the army when such sites for camps are chosen and such "hygienic" conditions are permitted to exist? If the final responsibility for selecting camp sites had rested with competent medical authority (where alone it properly and naturally should rest), is it possible that Camp Alger and the camps at Chickamauga and Tampa would have existed?

But the Surgeon-General of the United States, merely a political appointee and in no way responsible to the medical profession, is, in effect, little more than a highly placed departmental clerk, with great responsibility and no adequate authority.

Does this comprehensive glance at the manner in which we, the medical profession, fulfill our duty to society as "guardians of the public health" satisfy us? Are we deserving of the admiration and confidence, on this showing, of our fellow citizens, in peace and in war? Is it not evident that it is not only just to ourselves but necessary to the well-being of the community that there should exist an organized authority with a central head, responsible to us, through his scientific eminence, as well as to the State and endowed by law with plenary power, to safeguard the physical well-being of the community in peace and in war?

A National Board of Health, in legal affiliation with all State and

Municipal Boards, of which the Federal head shall be *a member of the President's Cabinet*, is not only rational but feasible. As Secretary of the Public Health he should in time of war be also Surgeon-General of the United States, equal in authority to the Secretary of War to decide upon all matters which concern the health of the troops. Since the physical well-being of soldiers is of paramount importance in war, his authority should be supreme in all matters directly or indirectly affecting this, except when our troops are actually in the field. And he must be responsible, legally, to the President, the Commander in-Chief of the Army, alone. Difficulties! Of course there are difficulties. But was there ever a necessary reform without difficulties? In fact, the greater and more needful the reform, as history shows, always are the difficulties proportionately great and, we may add, the more certainly do perseverance and the justice of the cause overcome them in the end. Here we have ignorance and indifference as well as the natural dislike of radical change in the community at large and, on the other hand, the suspicion and jealousy of the political and military authorities to overcome. But the opposition of the people or citizens at large is merely a passivity which will quickly turn into popular enthusiasm when they are made to understand not only the advantages but the absolute necessity of this change to their own well-being. When this is obtained all other opposition will melt away without a trace.

Is there any doubt, even in the mind of the least sanguine, that this could be accomplished by determined and united effort upon the part of the whole profession? We number upwards of one hundred and fifty thousand in this country; has any body of men a greater or larger personal influence among our fellow citizen than we? If we really wish it, we will talk about it and write about it, will discuss it and adopt it as a principle to fight for in our medical societies and thus, by an affiliation of all our medical societies in this one object, we will bring an irresistible force to bear upon Congress. When we have reached this point, the voting lay community will, through our individual efforts, have already become willing and eager in their support.

This is what we can do and it is our duty to the State, to our fellow citizens and to ourselves.

REVIEWS.

The Treatment of Pelvic Inflammations through the Vagina. By WILLIAM R. PRYOR, M.D., Professor of Gynæcology New York Polyclinic, Consulting Surgeon City (Charity) Hospital; Visiting Surgeon St. Elizabeth's Hospital. W. B. Saunders, Philadelphia, Pa., Publisher.

The author claims that this book has been written at the request of the gentlemen who have attended his lectures and watched his operations, and is but an elaboration of his principles and technique in this class of cases. Only enough pathology has been introduced to enable the operator to identify the lesions. Some stress has been laid upon the physical characteristics of the intra-peritonæal lesions, as revealed by vaginal section, for it is upon such inspection that the nature of further work must be based. The book is written in the characteristic, clean-cut and forcible style of the Author, and as he says "The spirit predominant throughout this book is that of aggressive interference." While this position may be disputed by the so-called conservative, but, in reality, timid and inexperienced operators, still it must be borne in mind that the work is not intended as a treatise on the prophylaxis of inflammatory diseases, but rather as a working guide in the actual presence of pelvic inflammation—a palliative method of treatment is also laid down where the conditions admit of such. There is still very great diversity of opinion among gynæcological surgeons as to the best methods of treatment in these cases, which the author evidently recognizes, for he says: "I have told what I think and do, the views of others can be readily procured from the medical press." One of the greatest objections to the vaginal route has been the difficulty of seeing what one is doing—working in the dark, as it were, or by the sense of touch alone, but, with the author's improved table, and special instruments, these difficulties appear to a large extent to have been overcome. His arguments as to proximity of the lesions, the diminished chances of infection, and the evident advantages of drainage by this route, can hardly be gainsaid by any one of fair experience in both methods—that is, abdominal and vaginal, in the class of cases in which the operation is advised. The good results obtained by the author would certainly tend to encourage him in perfecting and trying to bring this method into more universal favor among operators.

The descriptions of all operative procedures are carefully and minutely laid down, and numerous new original, as well as other cuts, help to illustrate the text.

The method of referring to headings of chapters, instead of the page, is cumbersome, and should be corrected, as it seems a useless loss of time to have to refer to the index, and then to the page.

Again, while plain and forcible English is always desirable in text-books, closer adherence to scientific language would seem to be more in keeping with the importance of the subject and the dignity of the profession. Such expressions as "pelvic filth" certainly do not lack force, but could hardly be termed scientific or elegant.

The work is a valuable contribution to the literature of this most important subject, and, while admirably accomplishing the aim of its author as to the gentlemen who have attended his lectures, the book can also be read with profit, both by the expert operator, as well as the advocate of the "let-alone policy," the one possibly finding some new and useful point of operative technique, while the other might be sufficiently impressed with the gravity of these conditions, to at least employ more active means to prevent their occurrence. The book is of convenient size, and typographical work good. E.M.P.

Electro-Hæmostasis in Operative Surgery. By Alexander J. C. SKENE, M.D., LL.D., Professor of Gynæcology Long Island College Hospital; formerly Professor of Gynæcology New York Post-Graduate Medical School; Gynæcologist Long Island College Hospital, etc., etc. D. Appleton & Co., New York, N. Y., Publishers.

This contribution relating to electro-hæmostasis and the use of the electric cautery in general and special surgical work is issued to supplement the third edition of the same author's work on the diseases of women, in which the subject was referred to but briefly.

The author says that "the interest manifested by the profession in this subject, the employment of new methods of operating in other than gynæcological surgery, a number of recent improvements in instruments and in the technique of operating, and a larger experience confirmatory of the value of the principles and practice advocated" have prompted this undertaking and raised the hope that the results will be acceptable to the profession.

The advance in surgical hæmostasis from the crude cautery iron of Paré to the aseptic ligature of to-day has been so great, that we have almost come to look upon the latter as ideal, and at first thought we are tempted to resent any suggestion as to the possibility of improving upon

it, as fanatical and foolish. Nevertheless, the wider one's surgical experience, the firmer becomes the conviction that the modern ligature has its defects and failings when employed in certain operations and under certain conditions. That this is true is shown by the fact that Doyen, Tuffier, and Thumin in Europe, and Bissell in this country, have recently perfected instruments with this same end in view—hæmostasis without ligature. The usefulness of the angiotribe and instruments of this class whose hæmostatic action is obtained by crushing the tissues would seem to be very limited as compared to the possibilities in all surgical conditions, of the electro-hæmostatic methods advocated by Dr. Skene.

The subject, of course, is as yet in its infancy, but the well-known reputation of the author as a skilful operator, a wise and conservative teacher, original thinker, and writer, should insure a cordial reception and careful investigation of the principles involved in the methods advocated.

- With characteristic modesty Dr. Skene says "in former contributions
- to medical literature I have avoided all declamations and special pleading regarding the merits of that which I had to offer, in order that I should have the opinion of the profession to guide me to rational conclusions regarding the value of my work, and having fared well in the past, I am perfectly satisfied to leave the present effort to the judgment of those for whom these pages are written—the thinking, reading, and working members of the profession."

The book is profusely and beautifully illustrated, showing the steps of the various operative procedures as well as cuts of the apparatus and instruments.

E. P. B.

TRANSACTIONS OF THE PERIODICAL INTERNATIONAL
CONGRESS OF GYNÆCOLOGY AND OBSTETRICS.

Third Session, Amsterdam—Aug. 8-12, 1899.

(From Official Reports.)

SURGICAL TREATMENT OF UTERINE FIBRO-MYOMATA.

BY E. DOYEN, PARIS.

(Translated from the French and abstracted for this JOURNAL.)

The indications for surgical treatment of uterine fibro-myomata have increased according as the advance in technique has diminished the dangers of such intervention. It is admitted to-day that these tumors are not always a benign affection; and even if we ignore the most usual dangers, hæmorrhage, increase of the size of the tumor and the ordinary symptoms of pressure, grave complications such as phlebitis, albuminuria, intestinal obstruction and cancerous degeneration darken the prognosis of many of the cases.

The phlebitis, which may supervene either suddenly or as the result of surgical intervention (ablation of the annexa or hysterectomy), is an infectious one, its usual point of origin being the uterine cavity. In a case of severe phlegmasia following tubo-ovarian castration for hæmorrhagic fibroma, a vaginal tampon was examined and found to be soaked with an almost pure culture of streptococci; and it was found that this patient's physician had previously passed sounds into the uterus without antiseptic precautions. In cases of fibroma the uterine tissue is frequently affected with a latent infectious lymphangitis, which explains the origin of the severe septic peritonitis which is sometimes observed after the removal of small tumors.

Albuminuria supervenes in these cases, as sometimes in pregnancy, without seeming to depend upon the size of the tumor or the tension of the abdominal walls. It is frequent in cases of impacted fibroma, but we have also observed it when the fibroma was very movable, even pedunculated. The quantity of urine is especially diminished when there is compression of the ureters, in one case being reduced to 250 grammes in the twenty-four hours, with a percentage of from 3 to 6

grammes of albumen to the litre. These patients recovered and the albuminuria disappeared. One case presented ascites and double hydrothorax, twelve aspirations having been performed without benefit; the ablation of a large fibroma, which had been originally pedunculated and had later become detached from the fundus of the uterus and fixed to the annexa by vascular adhesions, was followed in twelve days by disappearance of the fluid and of the albuminuria. This frequent complication, then, so far from being a contraindication, is one of the most urgent indications for surgical intervention. Extreme anæmia and hæmorrhage are likewise most pressing indications, ablation of the tumor and ligation of the uterine arteries being the only really efficient means of stopping the hæmorrhage.

Intestinal obstruction may be due to compression, as of the rectum by an impacted fibroma of moderate volume, and is then rarely serious; or it may be a true strangulation, often occurring when bands and adhesions exist at the back of the tumor. This complication has been frequently observed in cases subjected previously to "palliative" treatment, electrization or interstitial injections of ergotine, methods which should be unsparingly condemned.

Malignant degeneration of the fibromatous uterus is to-day demonstrated; it is frequent enough to be considered in the prognosis and as an indication for operation. Sometimes the fibroma itself undergoes sarcomatous transformation, sometimes we may observe an epithelioma of the cavity of the cervix or of the mucous membrane of the body of the uterus. One case operated upon presented a fibroma which had become sarcomatous and, as a result of electrization, gangrenous.

The sole curative treatment, then, of fibro-myomata of the uterus is by surgical intervention, and almost exclusively by direct intervention, *i. e.*, according to the number and topography of the tumors, myomectomy or ablation of the affected uterus. Its results are unobtainable by palliative methods, which are unsafe and have fallen into discredit. Operation is not indicated in all cases. Should the fibroma remain stationary the patient ought to be examined two or three times a year; but should it be increasing in size and causing various symptoms operation is necessary. In a young woman a pelvic fibroma about to extend above the superior strait is an indication for immediate vaginal hysterectomy; if too large to be removed by the subpubic route and if there be no complications, the case may be watched and abdominal hysterectomy be performed at a convenient time. We have found many large fibromata continue to develop after the menopause, and have also noted in the subjects of fibro-myomata a continuation of the metorrhagia

up to the age of sixty-three or sixty-five years. In one case where we diagnosed a fibroma in the process of malignant degeneration, from the fact that the hæmorrhages ceased at the menopause to reappear at the age of sixty, we found only a true fibro-myoma, not degenerated. On the contrary, we have frequently observed on cutting into fibro-myomatous uteri small points of degeneration upon the intra-uterine tumors.

Before approaching the present state of the question we are going to review the principal epochs of the surgical treatment of fibro-myomata, avoiding the useless enumeration of isolated observations and trifling modifications.

The discussion which is to be opened ought to result in the general adoption of a carefully determined line of conduct and of an exact operative technique. I shall try to show for my part that my method of vaginal hysterectomy without preventive hæmostasis, by a simple or V-shaped anterior median section, and my method of total abdominal hysterectomy by subserous decortication of the inferior segment of the uterus, are the two greatest steps that the surgery of fibro-myomata has recorded in recent years; that my technique is so simple as to permit of remarkable perfection, so sure that it almost entirely suppresses all the risks of the operation, that it allows slight modifications of detail in any case, and that it is within the scope of all surgeons. The technique of hysterectomy has passed the period of experiment, and should be as assured as that of an amputation. The method which will be adopted as the best will be that recognized as the simplest and quickest; any one with surgical experience will agree that the excessive length of operations is unfavorable for the patient, and that useless manœuvres endanger the outcome by bruising the fragile tissues which are to serve in the process of repair.

HISTORICAL.

I.—Vaginal Myomectomy with Preservation of the Uterus. (Amussat, 1840.)

Small pedunculated tumors projecting into the vagina had been previously removed, and VELPEAU and CHASSAIGNAC (1833) had recommended the ablation of polypi by incisions and scooping; but methodical morcellation of large interstitial fibromata was first applied by AMUSSAT, with whom the treatment of these neoplasms really entered the domain of surgery. His method consisted of free incisions into the cervix, rocking the organ forward, median section, and resection and

division of the tumor, which was then extracted in halves. The precautions designed to avoid opening the peritonæum and wounding the uterine artery and bladder, and the perforation and inversion of the uterus—such were the chief points of AMUSSAT'S operation. The first successes were, however, followed by numerous failures and the operation fell into discredit. LISFRANC (1843) recommended enucleation with the fingers or spatula, but only of such tumors as were small and easily accessible. The operation of AMUSSAT, abandoned in France, was introduced into America by ATLEE in 1853, into England by BAKER BROWN in 1862, and into Germany by LANGENBECK.

II.—Ablation of Pedunculated Fibromata by Laparotomy. (Atlee, 1844.)

ATLEE in 1844 succeeded in ablating a pedunculated fibroma by laparotomy; but similar operations at this period met with numerous failures.

III.—Intra-vaginal Amputation of the Fibromatous Uterus. (Kimball, 1835.—Koeberlé, 1863.)

Although supra-vaginal amputation of the fibromatous uterus was done for the first time by KIMBALL in 1855, its technique was really established in 1863 by KOEBERLÉ, who may be called the father of the method. KOEBERLÉ devised compression of the stump, which had formerly been tied with ordinary ligatures, with the *serre-noeud* and the wire loop, thus suppressing all danger of hæmorrhage. PÉAN, who was the first in Paris (1869) to perform abdominal hysterectomy, improved the method by substituting for the *serre-noeud* of Maisonneuve that of CINTRAT, with movable head, and in generalizing the employment of metal pins which retained the stump outside of the wound and diminished the risk of infecting the peritonæal cavity. This method, of KOEBERLÉ and PÉAN, of abdominal supra-cervical hysterectomy was soon generally adopted, though the inconveniences of the exterior treatment of the stump by metallic ligatures gave rise to numerous innovations, such as the temporary elastic ligature, return of the stump with buried elastic ligature, inclusion of the stump in the abdominal wall, and exclusion of the stump from the peritonæal cavity by making a collar of the parietal peritonæum; the technique of the suture and of the reduction of the stump being finally perfected by ZWEIFEL (1888) and CHROBAK (1891.)

IV.—Tubo-ovarian Castration by Laparotomy. (Trenholm—Hégar, 1876.)

The results obtained after 1872 from ablation of the uterine annexa, devised almost simultaneously by HÉGAR and BATTEY to anticipate the menopause pause in cases of dysmenorrhœa, were applied by TRENHOLM and HÉGAR in 1876 to the treatment of hæmorrhagic fibro-myomata. This was an entirely new departure, which it was hoped would cause at the same time the cessation of the hæmorrhages and the retrogression of thetum or. LAWSON TAIT demonstrated the necessity of removing the ovaries and tubes altogether. These procedures led to the discovery of still imperfectly understood inflammatory affections of the ovaries and tubes, but were far from realizing the hopes of HÉGAR and TAIT in the treatment of fibromata. A peculiar phenomenon was the appearance of hæmorrhage like the catamenial flow, sometimes once, sometimes monthly; in other cases the bleeding due to the fibroma was increased. Numerous misconceptions were revealed by the operations, and the unexpected difficulties and complications produced very unfavorable results; in many cases which were temporarily benefited, the hæmorrhages returned and the tumor increased in size, necessitating a secondary hysterectomy; and the operation of HÉGAR after enjoying incredible favor fell quickly into discredit.

V.—Abdominal Myomectomy with Conservatism of the Uterus. (Martin, 1878.)

MARTIN in 1890 recommended the abdominal enucleation of fibromyomata, having performed the operation many times since his communication to the Congress of Cassel in 1878. He avoided opening the uterine cavity; and when the fibroma was enucleated, closed the uterine wound with catgut, removing the annexa only when the uterine tissue contained still other fibromata difficult to reach.

VI.—Vaginal Hysterectomy. (Kottmann, 1881.—Péan, 1882.)

Vaginal hysterectomy, recommended by CZERNY in 1879 in cases of cancer, was first applied to the treatment of fibro-myomata by KOTTMANN in 1881, then in 1882 by PÉAN, who popularized the new operation. The method of the latter was characterized by substituting in the operation of CZERNY and MARTIN preventive forcipressure for the suc-

cessive ligature of the broad ligaments, PÉAN leaving the clamps in place and substituting ligatures for them at the end of the operation.

VII.—Revival of Amussat's Vaginal Morcellation by Péan. (1884-1886.)

PÉAN first tried vaginal morcellation of interstitial fibromata in 1884 and defined his method in 1886. He avoided opening the peritonæum as much as possible; his method consisted of scooping out the central cone of the tumor with a long, curved bistoury, after making bilateral section of the cervix, and, if there was room, of the body of the uterus. Sometimes he did not hesitate to approach the peritonæum, and has recorded a number of remarkable cases of intra-peritonæal myomectomies after incision of the cul-de-sac of Douglas or of the vesico-uterine cul-de-sac.

VII.—Péan's Application of Morcellation to the Vaginal Ablation of the Fibromatous Uterus. (1886-1889.)

About 1886 PÉAN applied his method of morcellation to the total vaginal ablation of the fibromatous uterus, preferring, however, simple enucleation except where the uterus would be so damaged as to render its preservation dangerous; he systematized forcipressure of the broad ligaments in 1886, following the recommendation of RICHELOT, who first proposed as the method of choice continuous forcipressure for forty-eight hours. It was not till 1889 that PÉAN fully favored total ablation of the uterus by the vagina. His method presented a great advantage over abdominal hysterectomy in getting rid of that veritable stumbling-block, "the stump," the source of nearly all the complications of the latter operation, by extirpating the uterus entirely, body and cervix. After having made a circular incision of the vagina and clamped the uterine arteries, he cut the cervix laterally and resected the two flaps, anterior and posterior, before approaching the mass of the tumor; this method leads us to a new operation, applicable to very large fibromatous uteri—i. e., abdomino-vaginal hysterectomy.

IX.—Péan's Abdomino-Vaginal Hysterectomy. (1886.)

In 1886, PÉAN conceived the idea of combining supra-cervical hysterectomy with vaginal ablation of the cervix; the former operation was done in the usual way, the stump was encircled with a wire loop

and returned, and the abdomen closed; he then extirpated the cervical stump by the vagina. This new operation was applicable to but few cases and involved all the risks of two operations. It deserves mention only as a step towards the total ablation of the uterus by the sub-pubic route, which was revived, in cases of fibro-myomata, by MARTIN in 1889.

X.—Total Abdominal Hysterectomy with Successive Ligation of the Broad Ligaments. (Martin, 1889.)

In MARTIN's operation, successive ligatures, from above downwards, were placed in the broad ligaments with the aid of a large curved needle; as soon as the uterus had been isolated down to the level of the cervix, either the latter was partly extirpated or the posterior cul-de-sac was incised, and the vaginal part of the uterus detached from the bladder and vagina. The tumor with the cervix was then completely free. The mucous membrane of the vaginal orifice was then sutured to the peritonæum throughout its circumference, and the ligatures of the broad ligaments and of the uterine arteries drawn with long forceps into the vagina. The great objection was that the successive ligaturing of the broad ligaments caused stretching and loss of substance of the pelvic peritonæum, so that the vaginal orifice between the bladder and the cul-de-sac of Douglas could only be closed by adhesions between the intestinal loops and the surfaces left denuded by the retraction of the peritonæum.

XI.—Vaginal Hysterectomy by Anterior Median Section of the Uterus, without Preventive Hæmostasis.—Hysterectomy by Simple or V-shaped Anterior Median Section, with Conservation of the Uterus. (Doyen, 1887.)

It was at the Congress of Brussels in 1892 that I first described in detail my methods of abdominal and vaginal hysterectomy. The attempts which I had made from 1887 to 1892 to draw attention to my operative technique had remained unnoticed. The defects of the clamp of RICHELOT and of the long clamp of PÉAN had led me to devise my new elastic clamp, of which the jaws, slightly concave and grooved longitudinally, were specially tempered, and designed to touch first at their extremities in order to approach each other at their middle parts only under considerable pressure. The instrument was presented to the Surgical Society of Paris in 1887, but the innovation attracted no notice, though it was adopted a few years later by all instru-

ment-makers. My communication on vaginal hysterectomy to the Congress of Surgery at Paris in 1891 had the same fortune. The many successes that my method of vaginal hysterectomy gave me after 1887, and the remarkable results I had obtained for a year from my most recent procedure, total abdominal hysterectomy, led me to describe in detail these two methods to the first International Congress of Gynaecology at Brussels. These procedures have since that time been subjected only to modifications of detail: in vaginal hysterectomy, the abandonment of the continuous clamp (*pince à demeure*), and the ligature *en masse* of the broad ligament after crushing it; and in abdominal hysterectomy, operation in TRENDELENBURG'S position, abandonment of the continuous clamp, and single ligature of the uterine arteries and stumps of the annexa.

The history of these two operations, which since 1892 have little by little replaced other methods, ought to be resumed in certain lines. My first vaginal hysterectomy for fibroma was done May 17, 1887. The uterus, full of interstitial fibromata and impacted in the pelvic cavity, weighed 1800 grammes and measured 19 by 13 centimetres. I had already devised my forceps with elastic jaws and had used them in a case of cancer of the cervix. The fibroma was difficult to reach; I first made an antero-posterior section of the cervix; PÉAN'S transverse section seeming irrational in that it carried the knife to the point where the principal branches of the uterine artery come out, and compels the operator, at the risk of fearful hæmorrhage, to apply a long hæmostatic forceps upon the lower border of each broad ligament. The ease with which I had removed two cancerous uteri without the preliminary use of hæmostatic clamps induced me to defer all hæmostasis till after the extraction of the organ; had any artery begun to bleed during the operation it could have been easily clamped or tied. The operative details were as follows: After having entirely cut through the cervix from before backwards, the fibromatous mass, in evidence below the anterior retractor, was directly attacked. With toothed forceps and large, curved scissors I removed three lozenge-shaped fragments from the body of the uterus; then, incising deeply and making traction upon one of the halves, I enucleated a great interstitial fibroma. The peritonæum being opened and two clamps placed upon the lips of the anterior section of the body of the uterus, I introduced the right index-finger behind the pubis, and perceived that I could press down the tumor, and that the anterior incision, prolonged in the shape of a V toward the fundus of the organ, would permit me to draw the latter down, opening it out and accentuating the inversion according as the new fibroma-

tous masses, brought into evidence below the retractor, offered themselves to the knife. The procedure of anterior V-shaped median section had been thus brought about very naturally; I had also operated methodically in reducing the morcellation to what was strictly necessary and in using no preventive hæmostasis; the patient had lost no blood. An elastic clamp was placed upon each broad ligament and the uterus detached. The patient recovered.

It was at about this time that I first performed, in a very anæmic woman with a single large interstitial fibroma, a vaginal *hysterotomy* by median section of the anterior lip of the cervix, and removed as large a tumor as it is possible to extract by the vagina.

Other cases followed, and at the time of the Congress of Brussels I had removed by my method of anterior median section, simple or V-shaped, 28 fibromata, with a single failure, and 21 enucleations of great interstitial tumors, of which a single case, a gangrenous fibroma operated upon during septicæmia, was followed by death.

XII.—Total Abdominal Hysterectomy by Sub-serous Decortication of the Inferior Segment of the Uterus. (Doyen, 1891.)

The method of abdominal hysterectomy which I presented to the same Congress was of more recent date. I had decided upon it in September, 1891, after numerous failures with supra-vaginal hysterectomy. Careful observation of the conditions of success in large, solid, retro-peritonæal and ligamentary tumors, which since 1888 I had removed by rapid sub-peritonæal decortication without preventive hæmostasis, tying some of the afferent vessels of the capsule and of the stump only after ablation of the tumor, led me to remove the fibromatous uterus by an analogous method. To treat the uterus like a ligamentary tumor, rapidly extirpating the whole organ and reducing hæmostasis to what was strictly necessary: such was the plan of my first operation. The tumor being drawn out of the abdomen and turned over upon the pubis, the peritonæum was incised from the equator of the tumor to the cul-de-sac of Douglas in such a manner as to open, upon a forceps introduced by the vulva, the posterior cul-de-sac. The peritonæum was then incised throughout the circumference of the tumor, and the left broad ligament detached from the uterus, seized by the fingers of an assistant, then clamped and ligated below the appendages; I then pursued the dissection towards the right, and the entire uterus, turned over towards me, was free, body and cervix, after dividing its inferior ligamentary attachments with large scissors. The superior border of the right liga-

ment, which alone held the tumor, was finally detached and ligated below the ovary. Hæmostasis was thus employed only upon such vessels as began to bleed: the uterine, the utero-ovarian, sometimes the vaginal. The uterus extirpated, the ligatures of the stumps of the appendages were drawn into the vagina, and after them the entire peritonæal collar, upon which two clamps had been placed per vaginam; then the pelvic peritonæum was sutured.

The procedure varied with the topography of the tumor. Usually I tied nothing till after the ablation of the uterus; the stump of the first appendage was seized by the assistant's fingers, a compress inserted in the pelvis if the uterine artery began to bleed; then with the left hand I grasped the right ligament at the moment I severed the uterus from its last attachments. If the posterior cul-de-sac could not be opened at first, I perforated with the clamp one of the lateral cul-de-sacs, preferably the left, and the cervix was freed on turning over the tumor towards me to isolate the second ligament. The hæmostasis assured, the peritonæum was sutured *en surjet* above the clamps and ligatures; or if loose, by a purse-string suture. The points of originality of this method are the absence of preventive hæmostasis, the vessels being ligated only if they begin to bleed, and the final hæmostasis being confined to the uterine and utero-ovarian arteries; and the sub-peritonæal decortication of the inferior segment of the uterus, by means of which enough and even more than enough of the peritonæum is left to make the closure of the vaginal orifice easy. The method was, moreover, applicable to all cases, particularly, as I showed in 1892, where the tumor on account of its intraligamentary development and many adhesions was not suited to the application, for preventive hæmostasis, of the provisional elastic ligature. I showed at the same time a new indication for my operation in cases complicated by pelvic suppuration, that demand total castration but are inoperable by the vagina.

My methods of total hysterectomy, abdominal and vaginal, were recognized at Brussels as new and without analogy to the methods of PÉAN or others. Moreover, my patients suffered little and were exposed to none of the complications so frequent after PÉAN's operation, such as vesical fistulæ, pinching of the ureter or intestine, gangrene of the vagina and pelvic adhesions; they were on their feet in fifteen or twenty days, and not one came back later to complain of post-operative pelvic pains, so frequent after incomplete operations, and due to the entanglement in the vagino-peritonæal scar of fragments of the uterine cornua, tubes, and ovaries.

The principle of my technique was, however, very simple, and based

solely upon anatomical study of the vascular supply of pelvic tumors. These great retro-peritonæal neoplasms receive their blood by well-known arteries, neither very many nor very large, and of comparative unimportance. The venous sinuses, on the contrary, can acquire a considerable development; these enormous veins appear as if carved upon the surface and within the substance of the tumor, and their slightest wound is followed by a very considerable hæmorrhage against which the elastic ligature is no protection; place it upon the pedicle of a great uterine fibroma, the tumor is engorged with blood before the uterine arteries are sufficiently compressed, and, so soon as the pedicle is cut, the field of operation is deluged with from four hundred to six hundred grammes of blood. Perform, on the contrary, a rapid sub-peritonæal decortication, turning the tumor over on the pelvis; this traction, by stretching the arteries, arrests the flow of the blood in them, and causes all the blood contained in the neoplasm to flow back into the iliac veins. It follows that when the fibromatous uterus is removed by this method the venous blood returns to the general circulation before the uterus is detached, and that one has to tie only the afferent vessels, the uterine and utero-ovarian.

If the section have encroached upon the borders of the uterus, hæmorrhage from the arterial arch and uterine artery is prevented as in vaginal hysterectomy by two ligatures; should the uterine artery be wounded it is only necessary to clamp it and continue the operation.

If the tumor, instead of being pedunculated, be ligamentary or retro-peritonæal, elastic ligature is impossible; these tumors, so justly feared, were formerly attacked by morcellation. If we judge the technique of PÉAN by his own operations, we shall be convinced that the loss of blood was considerable, despite all the clamps and ligatures, which, moreover, could not be carried deep without risk of ligating the ureters or wounding the iliac vein. From these great veins flowed not only the blood that had come to the tumor through the arteries, but also the venous blood of the general circulation, returning by the large intra-pelvic anastomoses close by; and the patient in spite of all the clamps and forceps, elastic ligatures, and even cautery, bled and bled continuously. On the contrary, strip the peritonæum rapidly back to the base of the tumor, and detach the neoplasm by traction and rotation; the great veins of the capsule immediately shrink. The field is free from large compresses; should any vessel begin to bleed it is clamped at once. Compression usually suffices for temporary hæmostasis; the vessels are tied after ablation of the tumor as after an amputation, and the abdomen is closed as soon as the hæmostasis is seen to be complete. Hæmostasis

is thus reduced to what is strictly necessary. Erectile tumors are amenable to the same technique; they are veritable sponges, gorged with blood, and formed of slightly retractile fibroid tissue, in which a wound gives rise to severe hæmorrhage; avoid the cavernous mass, detach it rapidly at some distance from its extreme limits and one has only the minute arteries to tie.

Thus my new methods were based upon precise anatomical study of the vascularization of these tumors.

Operate quickly and thoroughly, suppress every useless manœuvre and instrument, limit hæmostasis, avoid needless bruising of the tissues, remove the tumor rapidly, and take all the time necessary for closure of the wound—such are the prime rules of the general operative technique.

My operations take but little time, not because I hasten but because they are simple of performance, with movement each carefully weighed.

Since 1892 I have made slight changes in operative details. We shall see that vaginal hysterectomy can be done almost without danger, and that it is the proper operation wherever it can be performed more simply than abdominal hysterectomy. Total abdominal hysterectomy, as I have done it since 1894, when I adopted the TRENDLENBURG position, has itself become as harmless as ovariectomy. Finally we shall judge what are the indications for the partial operations—i. e., vaginal or abdominal myomectomy, and the exceptional tubo-ovarian castration by laparotomy.

My instrumentation has been perfected; my cutting-tubes (*tubes tranchants*), grooved forceps (*pince-gouge*), and my two types of helical tenacula (*érigne hélicoïde*) have much simplified the technique of vaginal extirpation. For abdominal hysterectomy I have devised an equal number of instruments; a hook with slide-catch (*érigne à glissière*) for grasping the cervix, a needle-holder curved on the flat, and slightly curved ligature-carriers for suturing the pelvic peritonæum. Finally my clamp for progressive compression is suited for either operation; as ordinarily closed, its multiplication of the power applied is about 2; but it is so constructed that by sliding up a movable ring the power obtained at the end of the jaws is some 20 times greater than the effort employed.

Here it is proper to introduce a moot point: whether in hysterectomy we should make our hæmostasis by crushing alone or by the ligature. I constructed multiplying clamps that gave seven or eight times the effort of the hand, finally a clamp with a double lever which gave a multiplying power of twenty. I tried to obtain by temporary compression with that instrument a permanent hæmostasis; the uterine liga-

ments, grasped three or four minutes, were reduced to a thin sheet of cellulo-fibrous tissue, almost desiccated, and capable of being cut without bleeding. Many times, however, at the peritonæal toilet the uterine artery would begin to bleed as if freshly cut, the friction of the compresses having separated the compact lamella left by the crusher. As I was accustomed, after clamping them, to tie the upper borders of the broad ligaments to prevent their reascending into the abdominal cavity, it seemed to me surer to tie also the uterine artery; and finally I simplified the technique by enclosing, at the end of the operation, the entire broad ligament in a single ligature. I do not favor hæmostasis by the prolonged action of the crusher without ligature for two reasons: the inconvenience of the retraction of the ligamentary wound into the pelvis (which my sutures fix, on the contrary, in the vagina); and the possible risk of secondary hæmorrhage, absolutely avoided by the employment of a ligature. Moreover, the crusher must be left in place three or four minutes; thus two applications to the lower borders of the broad ligaments and two further applications to the upper borders consume sixteen minutes, thus prolonging the simplest operations to twenty or thirty minutes; operations that I would finish, combining the crusher and the ligature, in five or six minutes.

INDICATIONS FOR OPERATION.

The principle being adopted that the curative treatment of fibromyomata is exclusively surgical, in what cases should operation be recommended? Certainly not, in the case of small tumors that do not grow nor give rise to any inconvenience; assuredly, in cases where the tumor causes the appearance of alarming symptoms and particularly in young women when its growth is very rapid. We have seen that malignant degeneration is frequent enough to enter into consideration; also that extreme anæmia and albuminuria, so far from being contraindications, are among the most urgent indications. Moreover, operations during severe hæmorrhage have succeeded perfectly, especially since post-hæmorrhagic anæmia can be treated successfully by injections of artificial serum.

Intervention determined upon, what operation should be chosen? Two routes are within the surgeon's choice, the vaginal and the suprapubic. The former should be reserved for the cases in which it is surer and more direct than laparotomy. It is to-day within the province of all surgeons, in simple cases at least, and there can be no

question of its superiority for small fibromatous uteri (such as have not risen above the pubis), especially in women that have borne several children. The operation, done by method, takes five or six minutes in my hands and from fifteen to twenty minutes in the hands of a less practised operator. The results are excellent.

In the cases of fibromata that have passed the level of the pubis, the success of vaginal hysterectomy will depend upon the experience of the surgeon. The points for consideration are the breadth of the vagina, the degree of mobility of the uterus, the shape of the tumor, particularly the presence of subperitonæal fibromata liable to be checked at the superior strait during the manœuvres of extracting the uterus, and the amount of fat in the abdominal walls. In general all fibromatous uteri that reach only two or three-fingers'-breadths above the pubis should be removed by the vagina. The impaction of the tumor in the pelvic cavity is no contra-indication, unless there exist small lateral tumors high up that are likely to oppose the descent of the principal mass. Old adhesions following attacks of pelvic peritonitis, and large tumors of the appendages, hæmo- or pyo-salpinx, are among the indications for laparotomy. Always when the diagnosis is uncertain, when the tumor appears adherent, and when the vaginal operation cannot be done with certainty, it is preferable to perform laparotomy. In cases where the tumor has passed the pubis I prepare the instruments for both operations, making my final decision after the patient is under chloroform, when it is easy to judge of the mobility of the uterus, the degree in which it yields to traction upon the cervix, and the elasticity of the vaginal canal. If doubt still exist I perform laparotomy. The surgeon is bound in a difficult case to consult only the interests of his patient and to choose the operation which in his hands will yield the best chance of success. A special indication often results from a condition totally foreign to the affection itself—i. e., the obesity of the patient. It has been demonstrated that in cases of fibromata of medium size, extending, for example, to the neighborhood of the umbilicus, vaginal hysterectomy is much harder and therefore more dangerous, if the abdominal walls be very fat, than abdominal hysterectomy. This latter operation, moreover, has been so much improved during recent years that I very often choose this route to-day for sub-umbilical tumors that formerly I should have removed by the vagina.

I should not have hesitated for five or six years to undertake vaginal hysterectomies which were likely to last forty or fifty minutes; the analogous operations of PÉAN lasted from two to four hours; actually I do not ordinarily undertake vaginal hysterectomy when it seems likely

to require more than fifteen or twenty minutes. Abdominal hysterectomy takes in easy cases about twenty minutes; and from thirty to fifty minutes in difficult cases, when, for example, it is necessary to repair great peritonæal or mesenteric lacerations or to suture a perforated or adherent loop of intestine.

I shall proceed to give a description of these operations as I practise them to-day, with the modifications of technique applicable to particular cases.

SCHEME OF OPERATION.

We divide operations for ablation of fibro-miomata into two classes:

I. Operations by the vagina.

II. Operations by laparotomy.

Each of these methods includes three subdivisions:

1. Ablation of pedunculated fibromata—polypi or sub-peritonæal fibromata.

2. Enucleation of interstitial fibro-miomata with preservation of the uterus—vaginal or abdominal myomectomy.

3. Total ablation of the uterus—total hysterectomy, vaginal or abdominal.

I.—OPERATIONS BY THE VAGINAL ROUTE.

1.—Ablation of Pedunculated Fibromata.

A.—Polypi of the Uterus. The ablation of pedunculated fibromata is very simple. The tumor is seized with toothed forceps, or better with my grooved forceps, the pedicle identified by the index-finger and divided by scissors. If the pedicle be short and broad, it is wise to incise the mucous membrane and enucleate the fibroma with the fingers or with curved scissors used like a spatula.

B.—Large Polypi impacted in the Vagina. It may happen that the fibroma, expelled from the uterus, is unable to pass the vulva. The pedicle is often so small as to break on the least attempt to rotate the tumor. Two retractors are placed in the vulva and the tumor is transfixed by a strong corkscrew (*tire-bouchon*). If its extraction in this manner is impossible morcellation is necessary.

The corkscrew is withdrawn, and the tumor perforated in several directions from its inferior pole by a cutting tube (*tube trachant*) of large diameter. The cylindrical pieces thus made are extracted with

a grooved forceps, and the tumor is grasped by toothed forceps, one arm of which is placed in the hole left by the cutting-tube and the other upon the surface of the tumor. A double cut, diverging right and left from the point grasped by the forceps (V-shaped), followed by two converging cuts, detaches a lozenge-shaped fragment; morcellation is continued, and the tumor when sufficiently reduced is rocked outward and engages at the vulva; a helical tenaculum is then implanted in the most accessible part of the upper pole and the remainder of the mass drawn forth.

2.—*Morcellation and Enucleation of Interstitial Fibromata. (Vaginal Myomectomy.)*

A.—Myomectomy without opening the Peritonæum Vaginal myomectomy with conservation of the uterus is indicated only when the fibroma is single, and the enclosing uterine shell is thick enough to preclude all danger of secondary perforation, or of septicæmia due to supuration at the site of the tumor.

Two conditions may present: either the cervix is already dilated sufficiently to permit the introduction of retractors, or the effacement of the cervical canal is still incomplete.

a. In the first case two broad retractors are introduced in front and behind, between the fibroma and the uterine wall, and morcellation practised by perforation with the *tube tranchant* and the cutting and extirpation of successive "lozenges" from the surface of the tumor. When the V's, cut successively to the front, to the right, to the left, and behind, come to project into the vagina, the index-finger is introduced between the fibroma and the uterus, and separates the tumor as much as possible from the uterine shell. When the volume of the fibroma is sufficiently reduced the remainder of the mass is removed with the corkscrew. One of the dangers is the perforation of the uterus; this happened to me in the case of a very soft uterus, but the perforation was recognized by the finger, posterior colpotomy done, the cul-de-sac of Douglas tamponed, and a glass drainage-tube inserted; recovery was uninterrupted.

b. If the cervix be not sufficiently dilated, it is necessary to cut it in order to get free access to the tumor. I incise the anterior cul-de-sac, strip back the bladder as in vaginal hysterectomy, and place a retractor between the bladder and the uterus. The cervix grasped by forceps is incised longitudinally along its anterior wall; if this single cut does not give space enough, I make a double V-section.

The anterior retractor is then introduced between the anterior uterine wall and the tumor, the latter perforated and extracted as before. The enucelation concluded, the uterine wound and then the vagina are sutured, and the vagina is tamponed.

B.—Intra-peritonæal Myomectomy. Vaginal ablation of subserous fibromata, after posterior or anterior incision of the peritonæal cul-de-sac, is only exceptionally indicated. The site of the tumor is afterwards sutured or tamponed, according to the conditions.

3.—*Vaginal Hysterectomy. A.—Fibromatous Uteri of Small Dimensions.*

1ST STAGE.—*Incision of the posterior vaginal cul-de-sac, opening of the cul-de-sac of Douglas, and exploration of the peritonæal cavity.* The vagina disinfected and the cervix grasped by two forceps, the short retractor is placed behind, and the posterior semi-circumference of the vagina incised from right to left; the posterior peritonæal cul-de-sac is opened with one cut of the scissors and the pelvic cavity explored with the right index-finger; the diagnosis is thus immediately established.

2D STAGE.—*Incision of the anterior vaginal cul-de-sac and separation of the bladder.* The retractor is placed in front, the anterior vaginal cul-de-sac is incised, and the bladder detached from the uterus, is pushed up with the right index and middle fingers as high as possible.

3D STAGE.—*Crushing of the inferior and middle portions of the broad ligaments.* The crusher is applied first to the left broad ligament, then to the right, and clamped as tightly as possible. The instrument is left upon each ligament fifteen or twenty seconds; it is needless to cut between the instrument and the uterus as the crushing is enough to permit the organ to be drawn down easily.

4TH STAGE.—*Anterior median section, simple or V-shaped, and rocking forward of the uterus.* The retractor protecting the bladder, I make anterior median section of the uterus. The anterior peritonæal cul-de-sac is generally opened with one cut of the scissors. The section is prolonged to the fundus and the cut edges grasped by toothed forceps, and the uterus upon the slightest traction appears at the vulva, with the appendages following.

If the uterus be very large it is necessary to make a double V-shaped cut instead of the single median one; if one has begun by the former, it is always possible to make two divergent cuts upon the fundus, thus transforming the section into a Y. Traction is made upon the median V, when the fundus is easily brought down, and followed by first one cornu, then the other, and finally the appendages.

5TH STAGE.—*Application of the elastic clamp to each broad ligament and liberation of the uterus and annexa.* The left annexa, ovary, and tube, are seized with the ringed forceps, the ligament stretched between the left index and middle fingers, and a clamp with elastic jaws is placed upon the ligament beyond the annexa from above downward so as to include the ligament completely and extend five or six millimetres beyond its lower border; the ligament is then cut between the clamp and the annexa. The left ligament is treated in the same way, and the uterus with the ovaries and tubes withdrawn.

6TH STAGE.—*Crushing of the upper border of the broad ligaments and application of ligatures.* Each ligament, which is only three or four centimetres in width, the lower part having been crushed at the beginning of the operation, is then grasped by the crusher beyond the clamp and compressed carefully so as to avoid denudation of its serous coat. A strong ligature is carried at the end of a straight forceps beyond the extremity of the ligamentary forceps and placed in the furrow left by the crusher, and drawn up while the assistant, carefully and under the directions of the operator, withdraws the elastic clamp. Each broad ligament is thus tied *en masse* with a single ligature, which, thanks to the crusher, has to encircle a stump of a total diameter of from four to six millimetres only, as may be observed when the ligatures come away ten or twelve days later.

7TH STAGE.—*Toilet of the peritonæum. Coaptation of the serous flaps and closure of the vagina.* A compress is introduced within the peritonæum; the anterior serous flap is seized with curved forceps, then the posterior vagino-peritonæal flap, and the peritonæal toilet is made while the left hand holds the two ligatures taut. The two ligatures are then tied together, but not so as to bring the two stumps quite in contact, and a compress is so placed as to draw the anterior and posterior serous flaps together.

B.—Large Fibromatous Uteri. The first three stages of the operation are as described above; the fourth, extraction of the uterus, differs.

4TH STAGE.—The cervix being incised (Y or V) up to beneath the retractor, the first interstitial fibroma that appears is attacked. If small it is extracted with the grooved forceps or helical tenaculum. If too large to pass the vulva without morcellation, it is perforated by the cutting-tube and divided into "lozenges," as described above, then drawn out. When the ablation of several fibromata has considerably diminished the whole mass, toothed forceps are placed upon the uterine shell at the edges of the V and draw it down still further; the index-finger examines the sub-peritonæal tumors which it is able to reach, and it is decided whether to continue the operation in the median line or towards one of the cornua of the uterus. If the case be very difficult the first V is resected and successive V-sections are made towards the points most difficult to reach. The aim is to reach as quickly as possible the anterior peritonæal cul-de-sac. To extract the uterus rapidly it is necessary to go over on its peritonæal surface and invert the fundus outward by traction on the last V. Enough tumors are enucleated (thirty in one case) to reduce the total volume of the organ sufficiently to allow the peritonæal shell to be drawn down. As soon as the fundus of the uterus is accessible, the two or three last V's are prolonged as far as the retractor, and the uterus drawn to the vulva with toothed forceps or the helical tenaculum. The later stages of the operation are as before described.

C.—Exceptional Manœuvres for the Extirpation of Fibromatous Uteri.

Modifications of the 4th Stage of the Operation.

An enormous sub-peritonæal tumor projecting into the cul-de-sac of Douglas often demands enucleation as the first manœuvre, either directly, by the posterior cul-de-sac of the vagina, or after posterior median section of the cervix. This was the condition in my first operation in 1887. Very rarely, for instance, when the uterus is markedly retroflexed, it is easier to rock it forwards than backwards. Total median section of the uterus, advised by MULLER in cases of cancer, is only very exceptionally necessary.

D.—Malignant Degeneration of the Fibromatous Uterus. In these cases vaginal hysterectomy should be done if the fibromata are of small size, otherwise abdominal hysterectomy. We particularly

condemn, in the case of large, soft uteri, total median section of the uterus, which increases the risks of peritonæal infection without facilitating the operation. The vaginal operation should be tried when the uterus is movable and not larger than the fist. When the malignant degeneration is seated at the fundus and is not very marked, the operation is not modified. If the cervix be cancerous, the vaginal part of the uterus should be dissected with the greatest care and the vaginal mucous membrane incised at least fifteen millimetres from the limits of the neoplasm. If the degeneration be in the body, the purulent and softened parts should be first curetted, and the operative field irrigated, then the uterus extracted by a V-section of its anterior wall, care being taken not to make too strong traction with the forceps lest they lacerate the diseased tissue.

E.—Uterine Fibromata and Peri-metritis (Adhesions, Inflammatory or Hamatic Salpingitis, Pelvic Suppuration). Operations in these not infrequent cases are difficult and are the triumph of my technique. Adhesions cannot always be made out before operation; when there are at once lesions of the annexa and a fibromatous uterus, it is difficult to tell which tumors are in the uterine walls and which are in its neighborhood; sometimes when the uterus is unaffected, tumors in the appendages with indurated walls may be thought to be uterine fibromata. The first procedure in my method is the incision of the cul-de-sac of Douglas and exploration of the pelvic cavity. It is then possible, if necessary, to abandon the vaginal route. Usually, however, should the finger recognize retro-uterine adhesions and tumors of the appendages, it frees the posterior surface of the organ up to the fundus, and then, the latter being pushed down by strong supra-pubic pressure, examines the tumors of the annexa. If there be a large pocket, salpingitis, ovarian or intraligamentary dermoid cyst, it is incised and evacuated. The posterior surface of the uterus being free, the pockets of the appendages are pulled down and detached from their adhesions, then removed with the uterus; the peritonæal toilet is made with great care and the end of the vaginal compress inserted between the two serous flaps to ensure drainage.

F.—Fibroma of the Broad Ligament. Medium-sized fibromata of the broad ligament may project into the lateral cul-de-sac of the vagina and may be removed by that route. Many times the exact site of the tumor cannot be made out before the operation. In some cases the general technique of morcellation is suitable.

G.—*Hæmorrhage during the Operation.* During the extraction of the fundus laceration of a broad ligament may occur; the blood immediately appears. A compress is placed at once upon the point of origin of the hæmorrhage, the ligament of the opposite side clamped, and the uterus detached. Two large retractors are placed in front and behind and the operative field sponged; the peritonæal rent is seized with long forceps and drawn down below the anterior retractor, when the arterial jet may be seen to strike the blade. The artery and lacerations are clamped and tied. Should the ligature slip one or more clamps may be left in situ.

POST-OPERATIVE TREATMENT.

We usually place on the abdomen three long ice-bladders; this usually obviates the use of morphine, which may be employed if the patient seems to suffer. The patient's bowels are moved on the third or fourth day, the vaginal compress removed on the fifth, and the ligatures separate of themselves about the twelfth day. The only possible accident is secondary hæmorrhage from a defective ligature. It is then necessary to anæsthetize the patient, remove the compress, cleanse the pelvic cavity, and place a ligature or leave a clamp upon the bleeding vessel.

OPERATIONS BY THE SUB-PUBIC ROUTE.

1.—*Ablation of Subserous Pedunculated Fibromata.* This is very simple. If the pedicle is slender it is ligated with silk; if very vascular it is compressed by an elastic ligature; the tumor is then extirpated, the stump cauterized, and the elastic ligature replaced by one of silk or catgut. These tumors may undergo calcareous transformation or may become gangrenous from torsion of the pedicle; they may be accompanied by ascites, hydrothorax, and albuminuria. All these complications disappear after the operation.

2.—*Abdominal Myomectomy with Conservation of the Uterus. Bilateral Ablation of the Annexa.* These exceptional procedures are mentioned only for completeness. I perform myomectomy only in cases of a single sub-peritonæal fibroma, when, in operations complicated with pelvic suppuration or intestinal fistula, the tumor hinders the replacement of the uterus, which is intended to serve in closing the upper part of the pelvic cavity. Bilateral ablation of the annexa is done only as complementary to the removal of ovarian or ligamentary cysts, when the uterus is known to be fibromatous, but the advanced age of

the patient and the absence of troublesome symptoms make its ablation inadvisable.

3.—*Total Abdominal Hysterectomy.* Total abdominal hysterectomy without preventive hæmostasis, with subserous decortication of the inferior segment of the uterus, which is the operation of choice, comprises the following stages:

I.—*Incision of the abdominal wall. Extraction of the tumor, after drawing it over the pubis.* The patient is placed in TRENDLENBURG'S position, the abdomen opened, the tumor pierced with a corkscrew and drawn out of the wound; if the tumor be very large REVERDIN'S elevator is useful; two compresses are then placed in the abdomen.

II.—*Perforation of the cul-de-sac of Douglas and elevation of the cervix.* When the raising of the tumor is unhindered and the cul-de-sac of Douglas is free, the assistant pushes up the peritonæum with a long curved forceps, which has been placed in the vagina before operation, while the operator incises, with the end of the forceps as a guide, the vagino-peritonæal floor; the orifice is at once enlarged with scissors, inserted closed and withdrawn open, and the index-finger explores the cervix. The vaginal part of the uterus is then grasped with an *érigne à glissière* and drawn upward and backward.

III.—*Separation of the cervix.* Two short strokes of the scissors, to right and left, close to the cervix, free the latter from its lateral attachments. The anterior flap is seized with forceps and the anterior vaginal cul-de-sac cut in turn. The vaginal part of the uterus being freed from its vaginal connections, traction upon the forceps detaches it from the bladder. The right index-finger assists in this separation and notes the remaining lateral fibrous attachments, which if they do not yield are at once cut with blunt scissors. The cervix frees itself from the bladder and is drawn upward, leaving behind the ureters and the arch of the uterine artery, which latter frequently remains intact.

IV.—*Extirpation of the tumor.* The left index-finger is carried between the uterus and the upper border of the right broad ligament, which is clamped and divided between the clamp and the uterus. The tumor, turned over towards the operator, separates from its last connections with the vesico-uterine cellular tissue and the retro-vesical peritonæum, and is detached from above downward from the left ligament, which is in turn clamped and cut.

V.—*Hæmostasis of the operative field.* The stumps of the appendages are crushed and tied, then cut in front of the ligature. The uterine arteries if they bleed are tied in turn. Often they have been

clamped at the time of raising the cervix, and the clamp is simply replaced by a ligature of silk. The hæmorrhage is usually controlled by four ligatures, though it may be necessary to tie the vaginal arteries or two or three veins. The hæmostasis completed, I proceed to close the pelvic peritonæum.

VI.—*Suture of the pelvic peritonæum.* The vaginal commissure is taken up on a curved ligature-carrier, then, with the aid of toothed-forceps, the retro-uterine peritonæum, the peritonæum of the stump of the right appendage (which is pierced beyond the ligature, taking care to wound none of the vessels), and finally the peritonæum between the stump of the appendage and the bladder. This suture being drawn tight and knotted, the ligature upon the appendage is observed to be pushed down below the peritonæum and retained in the neighborhood of the upper orifice of the vagina. The stump of the left appendage is treated in the same way. A transverse suture *en surjet* extending from the right to the left-hand ligature sets the peritonæum of the cul-de-sac of Douglas close up against the retro-vesical peritonæum.

VII.—*Toilet of the peritonæum and closure of the abdomen.* The peritonæal toilet is made with sterilized compresses, and the abdomen closed by two sets of sutures; the first of silk for the peritonæum and aponeurosis, the second of horse-hair for the skin.

Modifications of Technique Applicable to Particular Cases. 1.—*Shortness of the Upper Border of the Broad Ligament.* The fibromatous uterus may develop in such a way that the tumor is found to be saddled with a fibro-muscular band formed from the upper border of one or both broad ligaments. This is noted when the tumor is raised and drawn over on the pubis. The band is sought with the index-finger and divided between two long clamps; usually it is sufficient to free the uterus on the right side; if the left ligament be too short it is cut in the same way. The rest of the operation is as usual; the vessels of the right side, which in these cases are frequently spread out upon the surface of the tumor, may be clamped as the uterus is turned over to the left.

2.—*Obliteration of the Cul-de-sac of Douglas by One or More Fibromata of the Posterior Uterine Wall. Fibromata of the Anterior Uterine Wall.* If the raising and rocking forward of the uterus upon the pubis is hindered by one or more retro-uterine interstitial fibromata or by a large anterior fibroma, the serous membrane is incised at the desired point, and the tumors rapidly enucleated with the fingers or the screw.

In general any tumor that by its size or position hinders the raising of the uterus is at once enucleated. Any bleeding may be checked by compresses.

3.—*Intraligamentary Tumor.* If the tumor has developed in one of the broad ligaments, the peritonæum is incised over its surface and the fibroma elevated with the screw while the fingers push back the peritonæal covering and enucleate. The stripping, when difficult, can be much facilitated by friction with a sterilized compress. The ureter, which is frequently raised with the uterus, can be returned without injury to the pelvic floor. Should the cul-de-sac of Douglas be inaccessible, the vagina is perforated on one side, preferably the left, the cervix is seized and the fibromatous mass extracted by "rocking" from right to left. Some fibromata entirely raise the peritonæum and fill both broad ligaments, the recto-vaginal pouch and the cavity of Retzius; and the peritonæum passes over them like a bridge from the promontory to the suprapubic region. The extirpation of these tumors is the same, the serous envelope, thanks to the decortication of the tumor, being spared complete. When the uterus is removed a suture *en surjet* suffices to close the immense cavity and union is assured by aseptic vaginal drainage.

4.—*Salpingitis and Peri-uterine Suppuration.* Some fibromatous uteri are surmounted by tumors in the appendages. I have frequently found hæmato- or pyo-salpinx, sometimes pelvic abscesses, outside of the appendages, complicated by perforation of the rectum or of the small intestine. The omentum is detached from the tumor if it be adherent, and the upper part of the abdomen protected by large sterilized compresses; the pockets of the appendages are then enucleated; if rapidly done, nothing bleeds. If there be an intestinal perforation, the loop is at once enveloped in a sterilized compress and retained outside of the abdomen with forceps. The cul-de-sac of Douglas is exposed and the uterus removed as usual. The intestinal fistulæ are sutured and the pelvic cavity sterilized. In these cases I place in the vagina one or two glass drainage-tubes, to meet at the bottom of the pelvic cavity, and close the latter above them from the cæcum to the sigmoid, suturing the peri-vesical to the posterior peritonæum transversely *en surjet*. A compress is placed between the drainage-tubes and the protecting bridge of peritonæum. The peritonæal cavity is thus divided into two parts, the pelvic cavity tamponed and drained by the vagina, and the great abdominal cavity entirely

closed and perfectly aseptic. This method of partitioning the supravaginal from the pelvic cavity has given the most satisfactory results in complicated cases.

5.—*Fibromyomata and Tuberculosis.* Tuberculosis of the tubes and pelvic cavity, often of the uterine mucosa, may coëxist with fibroma. Such a case, treated by laparotomy and total ablation in 1893, is now in perfect health.

6.—*Fibromyomata and Cancer.* This is a frequent complication. In one of our supravaginal hysterectomies we find a cylindrical cancer of the entire uterine mucous membrane with superficial invasion of an enormous fibroma. Frequently there is a carcinomatous or sarcomatous transformation of the fibroma itself, sometimes there is cancer of the cavity of the cervix or of the vaginal part of the uterus. Hysterectomy by median section of the uterus, which I did in one case in 1891, I immediately abandoned. This operation would be still less indicated if one employs the TRENDLENBURG position. The pelvic cavity is so completely in evidence that one can dissect the ureters at leisure and extirpate the broad ligaments as far as the hypogastric artery. As the peritonæum can be closed *en surjet*, with or without vaginal drainage, the operation is as safe as for an ordinary fibromatous uterus.

The success which I have had with the total obliteration of large fibromatous uteri in process of malignant degeneration has led me to adopt the same route for much smaller tumors that I formerly removed by the vaginal route. In a recent case of this sort, in which a cancer upon the left side of the fundus reached as far as the peritonæum, the uterus was separated from the right broad ligament as usual. Then the vagina, held wide open by toothed forceps, was incised fifteen or twenty millimetres from the degenerated cervix and the uterus detached from the bladder. On the side of the left ligament the dissection was most delicate. An indurated mass extended from the lateral vaginal cul-de-sac to the peritonæum. All the corresponding part of the broad ligament was removed with the uterus. We decided in this case not to hesitate at the sacrifice of the posterior vesical wall or of the ureter, which is easy to suture in TRENDLENBURG'S position. The bladder was not cut, but the left ureter was found to be resected a distance of four centimetres. The superior end, fastened to a small probe, was drawn by forceps into the bladder, and the latter firmly sutured to the cellular sheath of the ureter, which had been previously fixed to the vesical wall by a fine silk

suture. A sound was left in the bladder parallel to a small sound fixed in the left ureter. The peritonæum was closed transversely by a suture *en surjet*, after tamponment and drainage of the cul-de-sac of Douglas. This operation, followed by success, demonstrated that ablation of the cancerous uterus by laparotomy is possible even when the broad ligaments are invaded; and that it is possible to resect by that route, in women of sufficient resistance, not only the cancerous uterus, but also a great extent of peri-uterine tissue, including the posterior vesical wall and the end of the ureter. Laparotomy is preferable to vaginal hysterectomy in that it permits a wider ablation of damaged tissue, and thus diminishes the chances of a recurrence.

7.—*Fibromyomata and Pregnancy.* It is not uncommon to find in a fibromatous uterus a three or three-and-a-half-months' foetus, macerated and partly expelled. It is only an incident of the operation, it often being impossible to make a diagnosis of pregnancy in these cases. Pregnancy cannot continue, the uterine cavity being filled with the fibromata. The intervention necessary may be myomectomy, Cæsarean section, or total ablation by laparotomy, and demands no special description.

8.—*Fibromata of the Broad Ligament.* Fibromata of the large ligament are often accompanied by a small and nearly normal uterus. Whether its point of origin be in the uterine tissue or in the ligament itself, the technique does not differ from that given for the decortication of large ligamentary fibromata. The uterus is removed as usual with the tumor that surmounts it.

AFTER-TREATMENT.

This is very simple. The patients suffer little. If the temperature rises above 38° C., which is exceptional, the wound is powdered with guttol, covered with aseptic gutta-percha tissue, and four or five ice-bladders applied, the cold considerably abating the abdominal and even the general temperature. The vaginal tampon and drain, when used, are removed on the third or fourth day.

STATISTICAL RESULTS.

Among the best of previous statistics were those of TREUB, who out of 50 cases of abdominal hysterectomy with replacement of the pedicle

lost 5, or 8.7 per cent. With others the mortality varied from 21 to 50 per cent. Before 1891 I had operated, with external treatment of the stump, upon 29 cases, with 3 failures, or 10.4 per cent. From 1891 to 1894, the time at which I adopted TRENDLENBURG's position, I had 3 deaths in 25 total abdominal hysterectomies. From 1894 to 1896 I had performed 35 operations, with a single death (from broncho-pneumonia in a woman over sixty years old), or 2.6 per cent. Vaginal hysterectomy before 1892 had given me 1 death in 28 operations, 3.5 per cent. After I had perfected my technique by the employment of the crusher and by the substitution of the ligature for the continuous clamp, I have performed at my clinic in Paris 52 hysterectomies for fibromata, of which 27 were vaginal, all followed by recovery; and 25 abdominal, with 1 death, in a woman affected before the operation with an infectious phlebitis of the legs and a calculous appendicitis. If we add 15 vaginal hysterectomies done at Reims, by my method, we have a series of 42 vaginal hysterectomies for fibromata without a single failure. These figures are my best argument.

CONCLUSIONS.

1. The surgical treatment of fibromyomata should consist in their ablation.
2. The bilateral extirpation of the annexa by laparotomy has been generally abandoned, and is indicated only as a complement to ovariectomy when uterine fibromata exist without causing serious symptoms.
3. Fibromyomata should be ablated by the vagina when operation by that route is easy.
4. Laparotomy is preferable when the vaginal operation seems to present real difficulties.
5. Vaginal myomectomy and hysterectomy should be performed by simple or V-shaped anterior median section of the uterus.
6. Large interstitial tumors are scooped out by the cutting-tube (tube tranchant) and extirpated by morcellation in "lozenges."
7. The ablation of large pedunculated fibromata by laparotomy presents its special indications. Abdominal myomectomy is only rarely indicated.
8. The operation of choice for multiple and large interstitial fibromata is total abdominal hysterectomy by subserous decortication of the inferior segment of the uterus, with closure of the pelvic peritonæum.

THE SURGICAL TREATMENT OF FIBROMYOMATA.

(Extract of the Report by Prof. Schauta, Vienna.)

SCHAUTA contributes the result of his personal experience founded on 424 cases of operative treatment of myoma uteri with opening of the peritonæum, in a number of 2263 peritonæal operations performed by him.

General indications. Tumors are only to be treated surgically in cases where all other treatment has failed. When they merely exist without causing pain or any other symptoms, it is not justifiable to operate.

Palliative operations. Curettage and castration. These should be generally set aside as inefficient and very often dangerous, and only be resorted to in cases of very small intramural tumors, that cause no plastic changes in the uterine cavity.

S. performed castration forty-five times, with three deaths, two from interior hæmorrhage, after the ligature had slipped off, and one from peritonitis.

Vaginal radical operations. Removal of submucous pedunculated tumors or of those with broad implantation, through the dilated cervical canal.

There is little to remark about the first, the way being clearly shown. It is always a legitimate treatment, even in cases where there is evidence of tumors in utero, on account of its absolute freedom from danger and painfulness, and because hæmorrhage ceases after the ablation.

With *broad-based* submucous myomata it is necessary to dilate and sometimes to cut open the cervix. Enucleation is only indicated when part of the tumor is born. The operation must, on no account, last longer than one séance on account of the danger arising from possible sepsis, or gangrene.

Interstitial or subperitonæal tumors, when isolated, and not larger than a man's fist, may be treated by vaginal cœliotomy and enucleation, the bed of the tumor being stitched up afterwards.

This operation forms the transition to intraperitonæal treatment for tumors, which consists in dissection of the cervix, detachment of the bladder, opening of the peritonæal cavity, section of the capsula, enucleation of the tumor and stitching-up of the wound and the uterine wall. The uterus can also be left alone, or if there is any danger to be feared, from secondary hæmorrhage or infection, treated extraperitonæally between bladder and vagina.

Vaginal total extirpation. By principle this should be preferred to all other operations for myoma. The suitability for this operation should be determined, by the upper limit of the tumor, which should not extend above the umbilicus, and upon whether it can be pushed into the small pelvis; 148 cases with 5 deaths, of which 2 could not be considered as resulting from the operation, i. e., one from intestinal stenosis, and one case of putrid myoma; of the remaining 3, 2 were lost by secondary hæmorrhage, and 1 by peritonitis.

SCHAUTA's technique is so far different from the usual method, that after anterior and posterior opening of the peritonæum he stitches their edges to the corresponding edges of the vaginal walls. The broad ligaments are secured by ligatures, and he then amputates the cervix as high as possible. He does not employ forcipressure.

Abdominal radical operations. Abdominal enucleation for the removal of pedunculated myomata by laparotomy. Entcleation is called for, only in cases of isolated tumors, not larger than a man's fist; the indication is, therefore, of rare occurrence. The same is to be said for pedunculated tumors, as they are seldom found isolated, and their removal demands amputation, either supravaginal or total extirpation. Schauta performed enucleation 25 times, with 5 deaths of which 3 from *embolie* and *pneumonia*.

Supravaginal amputation. Extraperitonæal treatment of the pedicle.

SCHAUTA, formerly a partisan of this operation, practises it now only in exceptional or urgent cases. About the technique need only be mentioned, that amputation of the uterus does not take place, before having stitched the peritonæum of the pedicle, underneath the ligature, to the parietal peritonæum of the lower angle of the wound, as a preventive to infection of the peritonæal cavity by the contents of the uterus. On 78 similar cases, 13 deaths, 2 from pneumonia, 1 from fatty degeneration of the heart, and 1 from rupture of a pyosalpinx, with peritonitis.

Intraperitonæal treatment of the pedicle. As an advocate of abdominal total extirpation S. only applied three times intraperitonæal treatment of the pedicle, twice with fatal results. He admits the primary advantages of this method, but considers the frequent occurrence of exudation, and the possibility of malignant degeneration of the stump, of far too great importance, to be overlooked and, therefore, searched for a better method.

Abdominal total extirpation. The only objection to this method is

its difficult technique, whilst it may also be considered that the rate of mortality is slightly higher than with extraperitonæal treatment.

SCHAUTA obtained the following results: On 106 operations, 12 deaths, *i. e.*, 15 per cent. There were, however, but 10 of the number that could be considered as the direct result of the operation, bringing the percentage to 9.4 per cent., the others were due to complications, as paralysis of the vagus, serious anæmia, embolie, etc.

SCHAUTA employs the following technique: After eventration of the tumor, the broad ligaments are secured on either side by forceps, two on each side; he then makes the incision of the serosa and detaches the bladder as far as the insertion of the vagina, the parametria, quite near the uterus, are clamped and the incision of the uterus made. Two clamps are likewise placed right and left of the lateral vaginal pouches and the vagina opened right and left. The tumor now hangs to a narrow bridge formed by the anterior and posterior vaginal walls. This bridge being in a similar way secured by two curved volsellæ, the uterus is severed. To the clamps are substituted ligatures, which are not cut short, to be used for drainage, and finally the peritonæum of the bladder is united with that of the posterior vaginal wall. Whether the ovaries should be removed or not, is a question which gives rise to great difference of opinion, and which requires a long course of careful observation in order to be solved.

SCHAUTA is no advocate of *forcipressure*, having lost 7 patients on the 40 cases, when he had applied this method to vaginal operations, nearly all the deaths being due to secondary hæmorrhage after removal of the clamps.

Drainage is recommended, as well as in cases of total abdominal extirpation. The supravaginal wound cavity is for this purpose left open towards the vagina, the threads which are left long perform the drainage.

Conclusion.

1. Operative treatment for fibroid tumors is not legitimate except, when they are the cause of troubles that are not to be conquered by other means.

2. Vaginal total extirpation should be considered as the safest, and in the long run, most successful operation. It should be performed in all cases when the tumor does not extend above the level of the umbilicus, and when it can be easily drawn into the small pelvis.

3. For large, not easily movable tumors, wholly or partially intra-ligamentary, abdominal total-extirpation should have the preference.

4. Supravaginal amputation with intraperitonæal treatment of the stump, gradually should be set aside in favor of abd. total-extirpation, although the immediate results of the former, are sometimes more favorable; it has been proved that there are more chances for absolute recovery, when no part of the cervix has been allowed to remain.

In emergency cases, supravaginal amputation with extraperitonæal treatment of the stump, may be, as it affords facility for speedy and absolute extraperitonæal execution, an advantage not to be underrated, in cases of extreme anæmia, asphyxia, weakness of the heart, and supuration of necrosis of the tumor.

6. Vaginal enucleation of broad-based, submucous tumors, either by way of the dilated cervix, or by the vaginal fornix, after anterior or posterior kolpotomy, with or without opening of the peritonæum, should be only resorted to, in cases where there are special indications. Myomata being generally multiple, it would not be likely that the operation would afford durable results and, therefore, cannot be considered as less dangerous than the redical operation, with removal of the uterus.

7. Curettage, should be looked upon as an uncertain mode of treatment, is neither wholly free from danger, and should be limited to rare cases of beginning myomatous development.

8. Castration should be strictly objected to on the ground of its not bearing comparison with the radical operations, with regard to reliability and immunity from danger. In quite exceptional cases, when it is not possible to perform supravaginal amputation with extraperitonæal treatment of the stump, it may now and then be resorted to.

9. It is not to be thought that the methodical use of forcipressure affords the patient advantages superseding the use of ligatures, except in so far, as they facilitate a speedy operation in typical cases. In cases of emergency or danger their use is certainly to be justified.

10. The full value of drainage of the supravaginal wound for furthering throughout the chances of asepsis and for the avoidance of exudation, in abdominal as well as in vaginal total extirpation, should be always kept in mind.

11. The question, if removal of the ovaries should be performed with vaginal or abdominal total extirpation is not yet decided. "Ausfall-erscheinungen" (Climateric Symptoms) have been observed either way.

If the ovaries are removed they appear immediately, if left back, after weeks and sometimes months.

(To be Continued.)

ABSTRACTS.

This Department is in Charge of the Following Staff of Sub-Editors:

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GYNÆCOLOGY.

UNITED STATES.

A Device for Washing Out the Pelvis of the Kidney through the Ureter.

L. B. TUCKERMAN (*Cleveland Med. Gaz.*, June, 1899) uses the following device made up of a combination of appliances found in the possession of every practitioner—a No. 6 French catheter, an ounce bulb, and a common exploring aspirator with the ordinary 3-way stop-cock, all connected by rubber tubing. The catheter is introduced in the ordinary manner through the Kelly speculum. A stylet is used in the catheter, passing the latter as far as possible without force, withdrawing the stylet two inches, passing the catheter farther, and so on until the pelvis of the kidney is reached, then, by exhaustion, the contents can be drawn into the bulb and inspected. The amount of fluid will determine the capacity of the pelvis of the kidney. If it is desirable to wash out the kidneys, the bulb can be detached from the catheter, filled with any desired preparation, then connected and the stop-cock reversed, when the fluid can be injected into the pelvis of the kidney. This operation can be repeated until the fluid comes away clear. Or if desired, the medicament need not be exhausted, but allowed to remain by simply withdrawing the catheter.

In a case with double pyelitis, where the right kidney was plainly palpable, the right ureter was nearly occluded, but at the second sitting the catheter was passed to the pelvis of the kidney. From this an ounce of pus was withdrawn, the cavity washed with boracic-acid solution, and left filled with a one-per-cent. solution of ichthyol. The patient was improved, although there was no hope of a cure, as examination of the pus from the ureters showed tubercular bacilli. In cases of pyelitis of gonococcal origin this treatment would seem rational and feasible.

Leucorrhæa.

GEORGE S. HARDEN (*Wisconsin Med. Recorder*, June, 1899) says

that this discharge, though merely a symptom of several morbid conditions, is usually spoken of as a disease *per se*; and for convenience it may be so considered. Excluding cases arising from anæmia, plethora, rectal irritation, and morbid sexual imaginings, the causes may be divided into three classes—uterine, cervical, and vaginal. The form due to intra-uterine polypus, sarcoma, or other malignant growth will not be referred to, as the other symptoms are of more importance than the leucorrhœa.

Under uterine causes, endometritis accompanied by chronic metritis with subinvolution is most common. It occurs most frequently in multiparæ, but may exist in women who have never been pregnant or even in virgins. In the latter cases it seems to be due to passive hyperæmia, sometimes dependent upon malpositions.

Preparatory to commencing active treatment, the patient should be well purged with a saline cathartic, placed in bed, and given copious hot douches twice daily for several days. The cervix should then be fully dilated and if the endometrium is much hypertrophied or otherwise diseased, it should be curetted down to the sub-glandular tissue, and the uterine cavity gone over with fuming nitric acid. After the separation of the slough, caustics and astringents may be applied until a cure is effected. Between the applications hot douches and saline cathartics should be persisted in. In mild cases of endometritis the caustics or astringents alone may suffice. Where there is marked subinvolution potash and ergot may be given internally, and if possible, the patient should be kept in bed.

Leucorrhœa due to retained placenta must be treated much as above.—curettage followed by the administration of ergot and potash.

In cases where there is no endometritis or malposition in women who have never been pregnant the writer uses soluble pencils containing astringents. Where there is stenosis of the os dilatation should be tried, and if this be insufficient an incision may be made about a quarter of an inch deep on four sides of the cervix and the tissue between removed with curved scissors, giving a funnel-shaped os.

Cervical lacerations often give rise to leucorrhœa, and their repair usually results in the cure of the discharge. The correction of malpositions will relieve leucorrhœa dependent upon them.

Vaginal leucorrhœa usually occurs in young girls, and may be due to improper diet, constipation, or masturbation. The exciting cause must be removed and large, hot, saline douches should be given frequently for a week, then a daily hot douche should be used, after which the vagina should be tied with cotton and powdered with iodoform.

Supernumerary Fallopian Tube.

J. WESLEY BOVÉE (*The National Med. Review*, July, 1899) thinks that abnormalities of the uterus and appendages account for some cases of ectopic gestation, and also explain the remarkable cases where conception has occurred during double pyosalpinx or after double salpingectomy. Where there has been double oophorectomy, and yet conception has taken place, it is evident that not only was there some portion of the ovarian structure left, but that also there was communication between this and the cavity of the uterus or the vagina, although the Fallopian tubes has been ligated. Gaertner's ducts, opening into the vagina near the meatus urinarius externus, have occasionally been found in women. Their inner or upper extremities are the parovaria.

The presence of more than one Fallopian tube on either side has been demonstrated by Glasgow, Richard, Pean and others; to these the writer adds a case coming under his own observation. In an operation for adhesion of the appendages and retroversion of the uterus, examination of the right appendage showed two fimbriated tube ends; through the upper tube a probe could be passed almost to the uterine cornu, the other was permeable to the probe for about two inches, but as the passage of a probe all the way to the uterine from the ampullar end of a tube is rarely possible, it seemed probable that there were really two similar, normal tubes in this case. The best theory as to the formation of rudimentary ostia is that at these points the Müllerian grooves fail to completely infold. But the complete supernumerary tube would be due to too much infolding, becoming differentiated later. Where a considerable portion of the uterine end of the tube is left in the stump after salpingectomy, or where the outer portion of the tube has been removed, these supernumerary ampullæ may continue the communication between the ovarian tissue and the uterus. If the plan of trimming the tube from the top of the broad ligament is followed in salpingectomy, these supernumerary tubes would be an important factor in bringing about communication between any ovarian tissue left and the uterus, and thus conception would be quite possible.

Complete Prolapse of an Ovarian Tumor through the Anus.

J. A. BAUGHMANN (*Illinois Med. Journal*, Aug., 1899) reports the case of a woman, aged 40, who had suffered for years from a prolapsed rectum. On examination a mass protruding twelve centimeters beyond

the anus was found. It consisted of the three coats of the bowel and a hard, round tumor, about five centimeters in diameter, which lay in the enlarged pouch of Douglas. This tumor was movable, very tender, and attached to a long pedicle that reached up into the pelvis, and proved to be the ovarian ligament and Fallopian tube. On laparotomy the tumor proved to be an ovarian tumor of the right side; as the left ovary was also diseased both were removed. Owing to difficulty with the anæsthetic ventrofixation of the rectum was abandoned for that time, but some months later an amputation of the rectum was performed. The patient recovered well from both operations, and was completely restored to health.

The Cause and Prevention of Uterine Cancer.

W. W. GRANT (*Denver Med. Times*, Aug., 1899) says that statistics show that the mortality from cancer has doubled in the last twenty-five years, while Dührssen states that a woman during the climacteric is in as great danger of dying from cancer as a soldier is of being killed while engaged in active warfare. Seventy-five per cent. of the cases of cancer in women are of the breast and uterus, while the proportion of cases of cancer of the cervix to cases of primary cancer of the fundus uteri is as 16 to 2. Embryological cellular degeneration has been accepted as a theory of the causation of cancer, but more recent researches point to a distinct cancer bacteria, though its exact nature has not been fully determined. But traumatism, as an established predisposing cause at least, must be recognized. Cancer of the cervix is rare in women who have never borne children, nor have suffered lesions of the cervix from the use of instruments in the hands of gynæcologists. The disease usually begins in the squamous epithelium, but may begin in the cylindrical or epithelial cells of the cervix and invade the body of the uterus by direct extension. It usually occurs in the latter part of, or soon after the close of, the child-bearing period, and is more common in the well-to-do than in the hard-worked classes.

Matthew Duncan, a most acute observer, said of the diagnosis of cervical cancer: "We have no way of making sure of the beginning, even if we were constantly examining. The earliest and best grounds attainable are indications of disease already considerably advanced." The earliest possible diagnosis is of the greatest importance, as upon it rests the chief hope of curing the disease by the one reliable remedy—complete extirpation. A watery, irritating discharge and hæmorrhage are generally the first outward manifestations of the disease. His-

tological examination of the blood may be of aid in the matter of diagnosis, but the disease, being local at the beginning, will have made some advance before blood changes occur.

Cervical cancer is a common sequel to laceration and contusion of the cervix; but it must be borne in mind that not all cervical injuries are apparent at the external os. Hard, cicatricial tissue often exists in the cervix and at the internal os, while the external os seems normal. If there is as a result innutrition, interstitial infiltration, hardness, interruption of the circulation and innervation, these are favorable environments for degenerate cell development and for parasitic infection. Prevention of injuries to the cervix during labor or during operative procedure is of first importance, but if they do occur, prompt repair is demanded. Trachelorrhaphy, by restoring the integrity of the cervix and its normal vascular, nerve and nutritive supply places it in the best possible condition to resist disease of any kind.

Dührssen, when suspicious symptoms present, removes the entire uterine mucosa, as some pathologists believe that cancer can only develop in epithelial tissue; but vaginal hysterectomy is preferable, being safer and more certain in results. Others advise high amputation of the cervix in the beginning of disease. The present mortality in operations for cancer of the uterus is about forty per cent. But, with earlier diagnosis and more prompt and more radical operative treatment, this percentage should be greatly lowered.

Sterility in Women.

J. R. NILSEN (*The Post-Graduate*, Aug., 1899) says that it must be borne in mind that non-conception may mean the non-fulfillment of only one of the numerous functions of the elaborate sexual system.

The theories of impregnation are varied, but the writer believes that the vibrative motion of the spermatozoa propels them, rather than that they are drawn into the uterus by any muscular suction of that organ. The question as to how the ovum gets into the tube would seem to be most satisfactorily answered by saying that probably the fimbriae act much as the sea-anemone's tentacles, covering the ovum and "seizing and securing" it, perhaps conveying it to the tube directly from the ovary.

The following causes of sterility may be attributed to the husband:

1. Absolute barrenness from any cause.
2. Impotence, incomplete coitus leading to the destruction of the sperma lodged in the lower vagina by the acid secretions of the latter.

3. Gonorrhœal infection of the wife; the most common cause. In the woman the causes may be classified under two heads, as given by Kisch.

1. Lack of formation of the physiological fluid constituents of the ovary lymph.

2. Sterility due to obstacles to contact of normal sperm and ovule.

Under the first are included: Congenital or acquired atrophy of ovaries; insufficient development of the ovaries; ovarian tumors and castration; chronic cophoritis and syphilitic affections of the ovaries; excessive adipose tissue; anemia; chlorosis; scrofula; morphinism; alcoholism, etc.

Under the second head are included: Congenital or acquired thickening of the tunica albuginea, preventing the rupture of the follicle; absence or faulty development of tubes, uterus or vagina; excessive narrowness of pelvis, rendering the vagina inaccessible; disease of the cervical glands; dislocations, adhesions and inflammation of the tubes; retro-uterine hæmatocele; atrophy, hypertrophy, eversion and erosions of the cervix; cervical catarrh, especially gonorrhœal; growths in uterine cavity; malpositions, primary or puerperal atrophy of uterus; atresia of vagina; tumors of labia or vulva; abnormalities of hymen; pathological condition of secretions; vaginismus, etc.

Gross lesions causing sterility are not necessarily hopeless. Conservative surgery has here its great field. A tube or ovary containing pus may be opened, washed out and repaired, and in numerous cases where there is only a slight lesion, or perhaps none can be detected, a exploratory laparotomy should be advised, when often the trouble will be found to be obstruction of the lumen of the outer extremity of the tube, or slight adhesions may exist which may be easily broken up.

General hygienic treatment will, in some few cases, lead to the disappearance of sterility.

Local Massage in Pelvic Disorders of Women.

O. B. WILL (*Peoria Med. Jour.*, Aug., 1899) says that, as usually encountered, all pelvic disorders resolve themselves primarily into one or more of three conditions: Inflammation, venous engorgement and neuralgia. They may be interdependent in varying degrees. All disorders arising from inflammation in its acute form, or where there is resultant encapsuled suppuration are not to be treated by massage; but preliminary engorgement, hyperæmic congestion, as also the hyperplastic and adhesive results are amenable to judicious massage. A

point to be strongly emphasized is that there can be no fixed routine of manipulation applicable alike to all cases; it must vary with the conditions present. One rule, however, applies to all; every part of the affected tissue must be brought at some time as nearly as possible under the friction of the hand or fingers, and never to such an extent as to induce pain. Perfect relaxation is an absolute essential to beneficial massage, and where this can be maintained under manipulation no harm will result.

The writer is a firm believer in the efficacy of electricity in pelvic disorders, especially in neurotic and circulatory disturbances, as well as in chronic hyperplastic conditions; and on account of the anæsthetic effect of the current, has found it well to precede massage by the use of electricity. Varicocele of the pelvic veins is often mistaken for graver pelvic disorders, and is frequently a stepping-stone to such troubles. Massage is valuable treatment for such cases.

The patient should be placed in the Trendelenburg or in exaggerated left or right lateral position. In married women the first and second fingers of one hand can be introduced into the vagina, while the other hand is placed on the lower abdomen externally. In fleshy and pendulous abdomens the process is interfered with materially. The uterus is grasped by cervix and fundus and drawn to one side, putting the opposite broad ligament on the stretch. To empty the veins of and adjacent to the ligament, the cervix by one finger and the fundus by the thumb and finger of the opposite hand are held in position, while the remaining finger inside and those outside are swept forcibly outward against the included structures, which are thereby compressed and the blood current hastened. After every tenth movement the external hand should compress the lower abdomen and stroke upward over the region of the common iliac veins and inferior vena cava, stimulating their circulation. Under such manipulations the rope-like, swollen and resisting veins virtually disappear. This treatment should be used at least every other day. The dry tampon is useful in these cases if properly adjusted.

In the treatment of neuralgias, old exudates and adhesions massage is of great aid and will often accomplish the relief of pain where operative procedures fail. The methods employed in these cases must partake largely of "nerve stretching," that is the tissue included in the sensitive areas must be manipulated so as to place the nerve trunks in a temporary state of tension, but this must always be exerted with the effect of increasing its longitudinal axis. In cases of sensitive cicatrices the tissues must be put upon the stretch in the same manner. In

the same way adhesions may be loosened, if not entirely freed, and many exudates stimulated to absorption. And, while the tissues and organs may not, in all instances, acquire their normal tone and vigor, yet they are, as a compensatory factor, preserved to the patient, and in the worst cases at least a tolerance is established, reflex excitability is lessened and local nutrition improved. In cases of atrophy and under development of the pelvic organs the value of massage is too well recognized to need especial mention here.

GREAT BRITAIN.

A Case of Bilharzia of the Vagina.

FRANK COLE MADDEN (*The Lancet*, June 24, 1899), of Cairo, says that in spite of the prevalence of bilharzia along the urinary tract, and in the rectum, among the lower classes of natives in Egypt, it is rare to find a case in which the primary infection is in the vagina. Even cases of secondary infection of the vagina are unusual. The men, as agricultural laborers, are paddling in the water and moist earth, and if the theory of skin infection is good, this water-inoculation may account for the greater frequency of bilharzia among men. The disease in the bladder manifests itself on the mucous membrane as single or grouped excrescences not unlike condylomata, with or without pedicles, varying in shape and size. The mucous membrane is thickened and the sub-mucous connective tissue hypertrophied. The capillaries are dilated, or even changed to cavities containing full-grown specimens of the distoma. In the parenchyma of the excrescences numerous eggs are found.

A young Egyptian woman was sent to the writer for a tumor of the vagina. She had about a year before had some pain over the pubes, and noticed a small, pendulous tag in the vagina; this increased in size, other pieces appeared and grew until the vagina was almost blocked. There had never been any rectal, uterine or bladder symptoms. She had never been pregnant, although married four years. Menstruation was regular and painless. Examination showed that the mucous membrane was greatly hypertrophied, owing to papillomatous changes; there were innumerable flat-topped elevations intersected by depressions, while on the anterior wall was a large pedunculated tuft. The opening of the urethra was hidden by a soft, warty mass, but the urethra was quite normal.

The greater part of the mass was removed, a catheter being placed

in the bladder to prevent injury during the operation. The edges of the wound were sutured with silkworm gut. The specimen, when examined microscopically, presented all the appearances of a bilharzia papilloma, and numerous ova were found in the sub-mucous tissues throughout the sections. After this somewhat unexpected diagnosis the bladder was carefully examined, but, beyond a slight roughness posteriorly, there was nothing abnormal. Several examinations of the urine failed to discover any bilharzia ova. It was evident that the condition was not due to extension from neighboring organs. The husband was a healthy soldier, and had no symptoms of bilharzia, either of the urinary tract or rectum. He stated that he had noticed a small tag in his wife's vagina, even when they were first married, and had observed the anterior tuft more than a year before. Thus, though there were discrepancies in the statements, the infection could not have been from the husband. Another thing difficult to understand, is the limitation of the disease to the vagina, with so many usual centers of primary infection in close proximity.

Procident Uterus treated by Quinine Injection

J. AIKMAN (*Ibid.*) reports a case of a laboring woman sixty-one years old, crippled by chronic deforming rheumatism of the knees and feet, who had suffered for seven years from prolapse of the uterus. When this first happened both the uterus and bladder came down between the thighs and remained there for a week before advice was sought. They were replaced and kept in fair position by a mechanical support. In May, 1898, quinine solution was injected into the broad ligament on either side of the uterus. The after rest was imperfect, owing to her circumstances, yet at the end of two months she got up with a perfectly fixed uterus. For some months she walked in her struggling, crippled way, and then cystocele occurred. A slight prolapse of the uterus took place the last of December, and in January another injection of quinine was given in the broad ligament. Since then the condition of the uterus has been perfect. A watch-spring rubber ring supports the cystocele, but, although the perineal structures are absolutely lax, the uterus hangs on its new supporting bosses which can be readily felt high up in the pelvis.

On the Enigma of the Uterine Sound.

JOHN BENJAMIN HELLER (*Quarterly Med. Jour.*, July, 1899) dis-

cusses the passage of the uterine sound to a distance far exceeding the depth of the uterus, and that without the exercise of force and usually without ill results. Either the womb must stretch, or the oviduct admit the sound, or the uterine wall be perforated. In many cases the evidence is inconclusive, but in some it has been possible to demonstrate what occurred.

As evidence that the sound may enter the oviduct, the most important case is Floeckinger's. In curetting a patient for incomplete abortion, who also had a subserous myoma, he found that the sound would pass to the handle; some time later it was decided to perform abdominal section for the myoma, and during the preliminary sounding the instrument passed once up to the handle. On opening the abdomen, it was found lying in the left tube, the tube and uterine wall being considerably stretched; it was also found possible to pass it into the right tube. Ahlfeld records a similar case, apparently verified by bimanual examination; others have been verified post-mortem.

In most cases actual perforation has occurred, judging by such cases as have been investigated by laparotomy. Courant reports such a case in curetting a myomatous uterus, Odebrecht in introducing Orthmann's instrument to raise the uterus for a ventro-fixation, Glaeser in curetting three months after delivery, Rosenfeld in curetting preliminarily to vesico-fixation, Donald in curetting for hæmorrhage three months after abortion, Brothers in curetting for chronic endometritis, Donald in curetting for post-puerperal endometritis. In some of these cases the perforating instrument was the sound, in others the curette. Kelly has perforated six times without bad result, but one of his assistants had a death in such a case from septic peritonitis. The writer had a case of incomplete abortion two months after miscarriage, that had been flooding persistently; curettement was apparently simple, when suddenly the instrument passed five inches towards the right side of the uterus, though the distance to the fundus was but two and three-quarters inches; in the former position it could be felt through the abdominal wall. The cervix was lightly plugged with gauze and the patient manifested no untoward symptoms. This personal experience impressed the writer with what others have reported of the extreme ease with which in these cases the instrument penetrates, seeming to pass without the exercise of the slightest force; in fact in one case, on examining the uterus after its removal, it was found that the sound's own weight was enough to carry it through the uterine wall. The conclusions are that the most needful precautions are asepsis, careful estimation of the size and position of the uterus, extreme gentle-

ness, avoidance of powerful ovum forceps in abortion cases, and rest in bed and careful surveillance after curetting. It seems that the accident may occur even with the greatest gentleness. Gauze packing and rest is unusually followed by recovery; in very serious cases exposure of the uterus and suture of the rent has been followed by excellent results.

The After-History of Excision of the Entire Breast.

J. E. SIMPSON (*Lancet*, July 8, 1899) has collected the following statistics of 100 consecutive cases operated on by A. E. Barker, between 1878 and February, 1898. The conditions for which the operations were done as follows:

Of these cases, 82 were schirrus cancers, 2 colloid, 2 schirro-encephaloid, 4 duct cancers, 4 cystic degeneration, 2 fibro-adenomata, 1 cystic adenoma, 1 duct papilloma, 1 chronic fibrosis, and 1 doubtful.

Five deaths may be considered due to the operation, occurring at intervals varying from four days to three months, from pleurisy, syncope, cellulitis, septicæmia and pyæmia, respectively; it should be said that at the time of the earlier cases antisepsis and asepsis were comparatively ill-understood.

Of the ten non-malignant cases all remained well so long as they could be traced, except one with cystic degeneration, who died from other causes, and the cystic adenoma, who was admitted to another hospital nine years later for malignant disease of the other breast.

Of the four cases of duct cancer, three were well from 3 to 10 $\frac{1}{4}$ years; the other died of pyelitis about 4 years after operation. The remaining cases of schirrus, colloid cancer and schirro-encephaloid will be considered together. Of these 86 cases, 23 are alive at present, after intervals varying between 11 years and 7 months, and eight months. Two of this group had recurrence after 20 and 16 months respectively. The patient free for the longest time was 45 years old at the time of operation, and had had the tumor for 5 years; the axillary glands were found to be cancerous, though they could not be palpated before operation. Nine more cases had remained well as long as they could be traced, varying from 6 to 3 years; except one that was lost sight of altogether.

The 54 remaining cases are known to have died; they lived for periods varying from 7 years and 8 months to two months; 43 died from recurrence, 5 local, 14 glandular, 24 internal generalization; the others from diseases variously diagnosed, some of which may have

been internal generalization of the cancer. The average duration of life in the cases that died from recurrence or some less certain condition is 28 months and 7 days. Of the two cases of schirro-encephaloid one died in 3 months; the other is alive now, 5 years and 8 months after operation, having undergone a second operation for recurrence 10 months after the first. The two cases of colloid died in 24 and 18 months respectively.

Six cases were operated upon a second time; leaving out of consideration one who had three recurrences and was then lost sight of, the average duration of life after the secondary operation was 18 months.

Regarding the operation, the skin incisions were free, the fascia dissected from the pectoralis major, and the axillary glands and fat almost always removed as widely as possible; where the growth was adherent a layer of the muscle fibers was also removed; in a few of the earlier cases the operation was less thorough. For many years the wounds have been closed without drainage. A microscopical examination was made in all doubtful cases. The duration of freedom from recurrence in those at present alive averages 41 months and 9 days; this figure leaves out of account those of whom there is no record of death for certain periods, which would increase it to 44 months and 23 days; also it must be much below the correct average for the reason that many of the cases are still recent.

A summary of the number of the 90 malignant cases alive at the end of successive years is as follows: At one year, 70; at two years, 49; at three, 33; at four, 19; at five, 14; at six, 8; at seven, 4; at eight, 3; at nine, 3; at ten, 3; at eleven, 1. Thus Volkmann's dictum that a patient that remains free from recurrence for three years may be considered cured is seen to be unwarranted.

It is evident, from the case of the patient free for 11½ years, that the axillary glands, even though they cannot be palpated, should be examined and removed. The rapidity of growth is seen to vary much, one patient after six years presenting a small nodule of recurrence, while another died from generalization in two months, though perhaps the tissues had been generally involved before operation. In general those over 60 years were less favorable to rapid recurrence, though some under 40 years presented none or late recurrence. In deciding upon operation in a given case, its individual characteristics must be taken into account; for, while the average freedom from recurrence is two years and three months, a particular case may have a much greater or less expectancy. The freedom from recurrence after a second

operation seems to bear a relation to the time between the first operation and the first recurrence, being in these cases generally about the same, though in one considerably longer. These points would seem to indicate that second operations are to be advocated.

Sudden Extrusion of Uterine Fibroid simulating Inversion of Uterus.

EDWARD MALIUS (*Ibid.*, July 29, 1899) reports the case of a woman who was sent into the Birmingham Hospital in a state of collapse, with a note from her doctor saying that she had inversion of the uterus. A mass eight inches long and four inches in diameter at its widest part was found protruding from the vagina. It was dark red, with bluish patches, smooth, moist and unyielding to the touch. Behind the attachment within the vagina a small aperture was found, into which a sound could be passed for two and a half inches, sliding behind and above the attachment of the pedicle. The mass was evidently a fibroid of the anterior lip of the cervix, dragging the uterus down into the lower part of the vagina. A transverse incision was made across the base below the bladder and a similar one posteriorly; the free hæmorrhage was arrested by clamps and ligatures. The base was dissected away and the mass removed. The edges were brought together by silk sutures, the vagina washed out with perchloride of mercury solution and packed with iodoform gauze. The growth weighed 2 lbs. 6 oz., and had the characteristics of an œdematous fibro-myoma, with some extravasations of blood in places.

The patient made an excellent recovery. She was forty-seven years old, and single. Two years before she had retention of urine for three days, following a strain. Eighty-six ounces were then withdrawn by catheter. Since then she had used a catheter herself for attacks of retention. The menstrual periods had been growing frequent, irregular and profuse. About a year before the operation, she first noticed a "swelling," which seemed to come down in the vagina on straining at stool or to pass urine. Growths of this kind are not generally developed from the cervical lip, and it is possible that this originated in the uterine wall and developed toward and through the substance of the cervix.

CANADA.

Surgical Gynæcology among the Insane: Right or Wrong?

A. T. HOBBS (*Canadian Practitioner and Review*, July, 1899) says that four years ago the medical staff of the Asylum for the Insane, at

London, Ontario, decided to ascertain if there were not among the female patients many cases of unsuspected pelvic disease. After looking into the history of the patients a number were selected for thorough examination under an anæsthetic. The numerous pathological lesions diagnosed by this investigation was a surprise, and the good results that followed the appropriate treatment of these diseases exceeded the most sanguine expectations.

The presentation of this work and its sequences before various medical societies aroused much criticism and opposition. "Wholesale mutilation of helpless lunatics," "Gynæcological operations for insanity," etc., have been the comments. These critics cannot point to a case in which an operation was done for, or because of, the mental condition. The text of the work was always "these operations are done primarily and specifically for the removal of physical diseases and the promotion of bodily comfort." If these operations are legitimate and proper when done by surgeons universally upon sane women, why are they characterized as mutilation" when done upon insane women for precisely the same conditions?

Subjective symptoms, as portrayed by the sane, indicative of internal disorders, are usually absent in the insane when afflicted with similar disorders. Demonstration by actual examination is the only reliable method of ascertaining the presence or absence of disease in an insane person's system. It is to be regretted that the majority of alienists lack training in gynæcology, for where so many women are congregated together as there are in insane asylums, there must be many cases of unsuspected, and, therefore, untreated, pelvic disease.

In 163, out of 187 patients examined, distinct pathological lesions or abnormalities were diagnosed. In 155 of these cases it was deemed necessary, on physical grounds alone, to remedy or remove such disease by appropriate surgical treatment.

Tumors and other serious lesions, necessitated 22 hysterectomies, 12 abdominal and 10 vaginal. Three deaths followed these operations—one from exhaustion, one from accidental hæmorrhage (brought on by patient) on the seventeenth day, and one from septic pneumonia. The latter was *in extremis* at the time of operation, there being pus invasion of every organ in the pelvis. Ovarian and tubal disease were treated in 21 cases, one of which died of pneumonia on the twelfth day. The abdominal cavity was opened and flushed with saline solution in two cases of tubercular peritonitis. Displacements of the uterus were corrected by 42 Alexander operations and ventro-suspensions. Diseased or lacerated cervixes were treated in 48 pa-

tients. In 31 cases, chronic endometritis, metritis and subinvolution were attended to. Lesions of the vagina and perinæum, including fistulæ, were repaired in 22 cases. Some of the patients had two or more lesions requiring treatment.

Mental recovery followed treatment in 60 cases; mental improvement in 40; no mental improvement followed in 51; and 4 died. The majority of the recovered or improved cases had been insane over two years, and are now enjoying mental and bodily health in their own homes.

OBSTETRICS.

UNITED STATES.

1

Four Cases of Infantile Monstrosities in the Same Family.

WM. M. HESTLE (*Virginia Med. Semi-Monthly*, June 23, 1899) relates the following history: In May, 1892, the patient, a well-formed, healthy young mulatto woman, gave birth to a still-born male infant, about the seventh month of gestation. Its body was well developed, but it had no arms or legs or external ears. The hands and feet were perfect, but attached, the former to the shoulders, the latter to the hip-joints. In July, 1893, and again in October, 1895, she was delivered of a full-term, perfectly formed, living female child. In March, 1897, she gave birth to a still-born male child about the fifth month of gestation. It was deformed precisely as the first child had been. In February, 1898, and again in December, 1898, a still-born male child was born, similarly deformed. The father is a very healthy man. During the woman's first pregnancy, about the third month of gestation, her brother entered her room about midnight and threw a living opossum on the bed, frightening her much. She felt great anxiety after that lest her child should be "marked." During her second and third pregnancies no fright occurred, but during the three later pregnancies she was frightened by the sight of an opossum, and had the same constant fear about deformity. There was no history of any deformity among the relatives on either the maternal or paternal side.

There seemed to be a direct causal relation between the fright from the opossum and the deformed children. In the opossum the legs

are very short, and the auricle is almost invisible on casual inspection. Just how the impression made upon the mother's mind could modify the shape and development of the child's body cannot be explained.

Permanent Separation of the Amnion and Chorion in the Mature After-birth forming Double Fœtal Sacs.

J. B. NICHOLS (*Med. News*, July 1, 1899) reports a case of a placenta with membranes and cord which he examined microscopically. The afterbirth was fully matured, and from a normal labor at full term. No details of the maternal history could be learned. The amnion was entirely separated from the chorion, so that the foetus was surrounded by two separate sacs. The outer sac corresponded to the ordinary foetal membranes, proceeding from the margin of the placenta about the foetus; this consisted of the chorion and decidua vera. The inner sac was, as shown by the microscope, the amnion; it was given off from the placenta around the insertion of the umbilical cord, and thence reflected over the cord and foetus. There was a broad interval between the two sacs, and the surface of the placenta was not covered by amnion. In such cases two separate discharges of waters may occur. It is a rare anomaly of the after birth, the writer only finding seven cases recorded. The two membranes are usually separate until about the third month of gestation, when they grow together.

Ectopic Pregnancy.

J. W. LONG (*Medical Register*, July, 1899) says that conception normally occurs in the Fallopian tube. Hofmeier has shown that the current of the uterine cilia is like the tubal current, from above downward. In the lower animals spermatozoa have been observed to make their way up into the tube, and have even been seen swimming in the peritonæal fluid on the surface of the ovary. Dührssen states that the spermatozoa may retain their vitality for three and one-half weeks in woman. Ectopic pregnancy may be defined as a pregnancy in which the normal downward passage of the fertilized ovum through the tube has been arrested. This arrest may be due to:

1. Obstacles within the lumen of the tube.
2. Some disease or abnormality of the tubal wall.
3. Factors external to the tube, encroaching upon or obliterating its lumen.

Pathology.—The foetal portion of the placenta develops at the loca-

tion of the foetus, while the maternal portion develops in the uterus and is cast off during the progress of the pregnancy, often leading the obstetrician to believe that an abortion has occurred. An active congestion begins at the lodgement of the ovum resulting in the thickening of the tissues and the formation of the foetal sac. The rapid growth of the ovum or hæmorrhage within the sac leads to the thinning of its walls, resulting eventually in rupture and the escape of its contents. This usually occurs from the eighth to the twelfth week, but exceptions have been noted. But for the hæmorrhage and subsequent infection the rupture of the sac might cause little disturbance. If the patient survive the first shock of a peritonæal hæmorrhage, adhesions quickly form, but even so further hæmorrhages may take place. Where infection occurs pelvic abscess, peritonitis, and septicæmia may follow. The foetus may be absorbed or broken down and lost in the suppurating mass, or go on to term as an intra- or extra-uterine pregnancy, or when dead, be converted into an encysted mass or lithopedion.

Ectopic pregnancy is more apt to occur after a period of sterility. Menstruation is often scanty instead of ceasing altogether, and about the tenth week fragments of the maternal placenta are passed with some brownish discharge. Rupture may result from a slight accident, as a misstep or even violent coughing or sneezing.

Physical examination prior to rupture will reveal a pulsating tumor situated near one of the tubes. This, with indications of pregnancy, should lead to operation without delay. Surgical treatment, prior to the fifth month, is the only rational thing. After the fifth month the interests of the child demand waiting, but the patient must be closely watched and the surgeon be ready to operate at a moment's notice if hæmorrhage or shock occur.

In newly ruptured and unruptured cases it is better to operate through the abdomen; where the rupture has occurred some days or weeks before the operation the best route is through the vagina, as a rule.

The Treatment of Puerperal Phlegmasia Alba Dolens.

T. MITCHELL BURNS (*Denver Med. Times*, July, 1899) says that as soon as this condition is diagnosed the uterus or any infected area should be thoroughly curetted. Three or more times a day the limb should be bathed with hot water by bringing the patient's hips to the edge of the bed and resting the heel on a chair. Cover the leg with one thickness of woollen cloth, place a bowl of hot water beneath the leg, dip a woollen rag into the hot water and wring it out over the

anterior surface of the leg, for half an hour at least, increasing the temperature of the water as the patient can bear it. Wipe dry and gently apply turpentine and lard, camphorated oil, or antiphlogistine, then cotton and a flannel bandage cut bias. Keep the patient in bed and the leg raised on a pillow until three days after all fever has disappeared. The bowels must be moved freely daily with saline cathartics. Tonics, especially strychnine, and a good liquid diet must be given. As the tenderness decreases and the leg begins to pit on pressure, use cold water, followed by rubbing with the dry hand toward the heart, and a flannel bandage next the skin to prevent swelling and favor absorption. Many authorities condemn hot fomentations at the first, fearing the dislodgement of a thrombus, but they use uterine and vaginal irrigation in phlebitis of the uterine veins, which should be just as dangerous. The writer's experience has been that hot water relieves the congestion and pain, shortens convalescence, and has no bad effects.

The Treatment of Eclampsia.

JOSEPH B. DE LEE (*Obsterics*, Aug., 1899) says that while the real cause of this terrible disease is yet unknown, the advance in the study of its nature has been marked. In all probability eclampsia is due to the presence in the blood of poisons, owing to some impairment of the liver as an elaborator of poisons, or to inefficiency of the kidneys as eliminators of poisons, and these poisons acting upon a hyper-excitable nervous system cause convulsions by influencing the vasomotor centers of the brain. While in the vast majority of eclamptics there are evidences of nephritis or at least of the kidney of pregnancy, yet it is probable that it is the toxæmia, which is variously considered either the cause or the result of the nephritis, that causes eclampsia. Lange's researches point to deficiency of the action of the thyroid gland as the cause of both albuminuria and toxæmia, which disappear on the administration of iodothylin.

While the urine may continue normal, yet as a rule careful and repeated examinations of the urine are the best index we have, though general symptoms such as headaches, vertigo, nausea, insomnia, neuralgias, etc., must be duly considered. It is possible that chorea gravidarum, pernicious vomiting, and grave anæmias may be caused by the toxins in the blood. Just before an eclamptic attack, the pulse is rapid and of high tension, there is headache, failure of memory, a boring pain in the pit of the stomach, flashes of light or temporary

blindness, tinnitus aurium, possibly vomiting and twitching of the muscles of the face and extremities.

A healthy, pregnant woman should pass sixty ounces of urine daily with a specific gravity of 1010 to 1016. The urea should show $1\frac{3}{4}$ to $2\frac{1}{4}$ per cent.

In the preventive treatment three things must be borne in mind. (1) The diet should contain very little nitrogenous matter, and consist of easily assimilated food leaving a minimum amount of waste. Spices, condiments, tea, coffee, alcoholics, beef, veal, pork, and mutton must be absolutely forbidden. In extreme cases a milk diet with a great deal of water should be taken, as improvement progresses starches and the proteid vegetables, with vegetable oils and butter, may be added. And when recovery is almost complete, one egg a day or a white-meat fish may be taken. (2) The emunctories must be persistently stimulated. Begin with a brisk purge and keep the bowels free with an aperient salt or water. The salines should be varied by the vegetable laxatives. On arising and before retiring the patient should drink one or two glasses of water, salted or sugared to taste. Buttermilk, alkaline diaphoretic mixtures and the old remedy, calomel, squills, and digitalis, favor diuresis.

Excretion by the skin is favored by hot baths, followed by rest in bed, or in bad cases the hot-water pack may be used. Jaborandi is to be avoided. Wool underwear, even in summer, should be worn to avoid a sudden chilling of the skin. Sub-dermal injections of normal saline solution are a valuable means for starting the kidneys and skin where quick action is demanded. Fresh air and rest are necessary. If all these measures fail and eclampsia is threatened the pregnancy should be terminated. The best method is anæsthesia, local asepsis, and Barnes' bag in the cervix.

After an attack has occurred. The patient should have the continuous attendance of a physician. (A) In all cases—

1. *Protect patient from the vehemence of the convulsion.* The patient must be kept absolutely quiet in bed in a darkened room, surrounded by pillows and with a gag at hand to put between the teeth to save the tongue.

2. *Narcotize the patient.* Give a quarter of a grain of morphine hypodermically every thirty minutes until three doses are given. Give 45 grains of chloral per rectum, and repeat in two hours if necessary. Use chloroform only for anæsthesia for operation, or where the convulsions follow each other in quick succession.

3. *Shall bleeding be practiced?* Where the case may be termed

sthenic, with strong, full pulse, and face flushed or cyanotic, bleeding will do good. Where there is pallor and weak pulse, stimulation by strychnine or nitroglycerine is indicated. Where there is engorgement of the right heart and pulmonary œdema threatens, bleeding, together with powerful heart-stimulation may save the patient.

4. *Aid elimination.* Use the means previously suggested, especially sub-cutaneous injections of normal saline solution.

(B) *Treatment during pregnancy.* Where labor has not begun, use the means above suggested and wait until labor comes on, or induce labor after the tendency to convulsions subsides. The dangers of injury and shock in the rapid dilatation and emptying of the uterus, and the irritation to the nervous system by it, may more than outweigh the advantages of the speedy termination of pregnancy. But where the convulsions become more prolonged, frequent, and violent, the pulse grows rapid and the temperature rises, the uterus must be emptied. There is great difference of opinion in regard to the amount of force that may be employed. *Accouchement forcé* should be rarely used. Barnes' bags and the *colpeurynter* are the best methods of dilating the cervix where haste is required as they also evoke pains and hasten the process in that way. Edgar's method of manual dilatation is the best, and even with this incision of the cervix with scissors is sometimes necessary. Forceps are preferable to version. If the child be dead, perform craniotomy. Repair vaginal or perinæal tears, but leave cervical tears unless there is danger of hæmorrhage. Do not tampon the uterus if it can be avoided. The child is often asphyxiated; it may be narcotized by the drugs given to the mother, and it may have convulsions.

During the puerperium the general treatment recommended under (A) may be continued. Narcotics should be used more sparingly unless the convulsions are very violent, while the eliminators must be stimulated to the full limit of safety. Oxygen is supposed to aid elimination by the lungs. *Veratrum viride* for a time was considered almost a specific for eclampsia, but the writer has seen convulsions recur while this drug was being pushed to its physiological limit. In conclusion it must be said that no one drug or method of treatment is applicable to every case, but each individual must be studied.

The Vomiting of Pregnancy.

JOHN P. DOW (*Mass. Med. Jour.*, Aug., 1899) says that the vomiting of pregnancy must be considered as a symptom, not as a disease, and

a symptom that must be treated according to the underlying cause. Consequently no uniform rule of treatment will hold good in all cases. The vomiting of the early months of pregnancy is always a neurosis, due either to the distention of the uterus or to reflex nervous influences dependent upon the recently established gestation. Narrowing of the cervical canal, erosion of the cervix, or friction upon some part of a displaced organ may cause it. In the latter months of pregnancy the vomiting may be due to a local irritation, to pressure upon the stomach by the enlarged uterus, or to some disturbance in the gastro-intestinal canal or in the nerves. In the early months a powder composed of one drachm each of lactopeptine and bicarbonate of soda, twenty grains of rhubarb, and six grains of ginger, a "knife-point full" before and after each meal, works well. For a faint feeling in the stomach a teaspoonful of a mixture containing one ounce each of bitter-almond water and orange-flower water, with two to six grains of hyoscyamus. If this fails, a teaspoonful of a one-per-cent. solution of carbolic acid may avail, or ten drops of a four-per-cent. solution of cocaine. Where local irritations of the cervix exists, an application of a ten-per-cent. solution of carbolic acid to the inflamed canal, or dusting the surface of an erosion with iodoform or bismuth, will often control the vomiting. Applications of a four-per-cent. solution of cocaine to the cervix will afford immediate but temporary relief. The bowels must be carefully regulated and a proper diet observed. A small cup of strong coffee, without sugar or cream, taken an hour before rising in the morning, often prevents nausea and vomiting. Vomiting in the later months of pregnancy is of less frequent occurrence, but is of greater importance as a rule. Local causes for the trouble should be searched for, and here, as in the earlier months, mild astringent applications to the cervix will often be helpful. A light galvanic current applied to the cervix may be tried, and in cases of great gastric irritation the positive pole of the galvanic current upon the stomach and the negative pole upon the spinal cord will give relief. If nausea and vomiting persist internal medication may be resorted to, but it is not usually necessary.

The great fact to be remembered is to treat the trouble in its beginning, instead of waiting until the patient is weakened by lack of food and suffering, and even in danger of life, before any remedies are used. The common fallacy that vomiting in pregnancy is a necessary evil and to be lightly regarded is mischievous and dangerous. Where all means fail the uterus must be emptied, nor should this be postponed until the patient is practically moribund, as is too often the case.

THE · THERAPEUTIC · FORUM

ALBERT C. BARNES, A.M., M.D., SUB-EDITOR.

The object of this Department is, as it has been heretofore announced, to give to the profession an opportunity to obtain independent criticism and information, especially in regard to the newer therapeutic agents, which shall be free from prejudice and from the suggestion of the manufacturers.

All communications from reputable physicians will be received, if the authors' names be signed to the articles. In all cases where the request is made, the names of such contributors will be withheld from publication.

ORIGINAL COMMUNICATIONS.

OAKLAND HYDROGEN DIOXIDE.

Hydrogen dioxide, chemically pure, is probably the most powerful of all disinfectants and antiseptics, and acts by causing definite chemical and mechanical changes in the diseased tissues to which it is applied. Its therapeutic activity is due entirely to the free oxygen it contains, which attacks pus and decaying organic matter, dissolving and removing these materials without injuring, in the slightest degree, the underlying healthy tissues.

In order to obtain the full therapeutic effects of the solutions of hydrogen dioxide, it is necessary that they contain three per cent. of hydrogen dioxide and that this percentage be preserved indefinitely. Decomposition or evolution of the hydrogen dioxide—as manifested by more or less explosion when the bottle is uncorked—renders the solution of less therapeutic utility. The prevalent idea that this explosion of gas, when the pressure is relieved, is an indication of strength and superiority is entirely erroneous. There are numerous instances on record in which this explosion of gas has resulted disastrously to surrounding objects and physicians and nurses have barely escaped personal injury. Properly prepared hydrogen dioxide should keep indefinitely without decomposing and no explosion should follow uncorking of the contents. Professor Leffmann who has made an exhaustive study of the chemistry of the various preparations of hydrogen dioxide states that much of this article on the market is of inferior

quality. He also asserts, that "tight corking does not prevent decomposition and the practice of wiring corks leads to dangerous pressure in the bottles." It is, therefore, necessary in selecting a brand of hydrogen dioxide to secure one which is undecomposed and which retains the material in solution for a long period of time. It is for these reasons that Oakland was chosen for use in the following cases treated in hospital and private practice. Satisfactory treatment of pus-infected wounds would be entirely unsatisfactory without the assistance of hydrogen dioxide. It removes pus and decomposing organic matter so completely that proper antiseptic treatment is much more effective. Two cases of mammary abscesses complicating lactation were incised and drained. The pocketed character of the pus cavities rendered direct antiseptic treatment practically impossible without the use of hydrogen dioxide. In both of these cases pus formation was rapid and profuse, but the injection of Oakland hydrogen dioxide half strength once daily removed entirely all traces of pus and afforded thorough cleansing of the infected areas. Wet bichloride dressing was employed after the hydrogen dioxide. Recovery in both cases was rapid and complete.

Several cases of bed sores complicated by pus formation were treated by application of Oakland hydrogen dioxide. Two of these cases—one following fracture of the vertebra and one in an advanced case of pulmonary tuberculosis—were particularly severe. In all cases the caustic factor—constant pressure—was removed by the use of an air mattress and the bed sores treated antiseptically first by the application of Oakland hydrogen dioxide and then by a dusting powder. In all of these the dioxide was of indispensable service in removing the adherent pus and detritus and thus affording complete cleansing of the affected surfaces. No toxic symptoms or irritation was observed.

Since the recommendation, about a year ago, of Upshur that hydrogen dioxide should be employed as an intra-uterine injection in cases of puerperal sepsis, hydrogen dioxide has been used in quite a large number of cases. It was injected in about one-fourth strength and the injections continued until the well-known frothing ceased. The cavity of the uterus was then irrigated by iodine water through a Bozeman tube. In all cases there is a rapid and complete disappearance of the symptoms of septicaemia which illustrates how the hydrogen dioxide penetrates to all the recesses of the endometrium and removes the putrefying retained decidua, etc. This method of treating puerperal sepsis is undoubtedly the most satisfactory one known. The treatment of burns by Oakland dioxide has been adopted as a routine procedure in

the surgical clinic. In the burns of the first degree it affords relief from pain and seems to check the spread of inflammation and hastens resolution. For this purpose Oakland dioxide is far superior and a much more cleanly agent than the use of carron oil and various oleaginous materials. Burns of the second and third degree attended with destruction and necrosis of the soft tissues are kept in a comparatively aseptic condition by the use of hydrogen dioxide. It was applied in one-third or one-fourth strength and was very effective in cleansing the surface and promoting healthy granulation. Ointments or dusting powders were used as subsequent applications. A large number of cases of burns of all degrees, treated throughout the year, many following gunpowder wounds, and a series of ten cases following an explosion in an oil refinery, were treated by Oakland dioxide with the most satisfactory results. Two cases of ozæna were treated by the post-nasal injection of Oakland hydrogen dioxide, one-fourth strength. In both of these cases the intolerable odor was removed, and there was marked relief in the subjective symptoms. Other treatment was used in conjunction with the dioxide.

I have records of eight cases of ordinary follicular tonsillitis treated by gargle of Oakland hydrogen dioxide, one-sixth strength. Granular Effervescent Salicylos—salicylates of strontium and ammonia—was administered in dessertspoonful doses every three hours. Gargling was practiced every half hour or hour. The combination of these two remedies is really remarkable in cutting short even very severe cases of tonsillitis. As an adjuvant to the antitoxine treatment of diphtheria, Oakland hydrogen dioxide is particularly serviceable. In forty cases of the various forms of laryngeal, faucial and nasal diphtheria, of which the writer has personal knowledge, Oakland dioxide was employed as a local application. The strength in which it was employed varied with the needs of the cases; the average strength was one-half or one-third. It instantly attacks and causes the disintegration of the false membrane which can then be removed by simple gargling. Of course, as the membrane rapidly reforms, the applications of dioxide by means of an atomizer should be made about every two hours. The superior value of Oakland dioxide for this purpose in diphtheria is beyond dispute. In fact local applications of dioxide are necessary as they remove the pathogenic bacteria and consequently the chief cause of the toxæmia. Antitoxine in full doses should be invariably employed. Oakland hydrogen dioxide was also employed as an antiseptic in a large number of various surgical affections in hospital and private practice. It can be safely concluded concerning this preparation that it is a

reliable, non-toxic and non-irritating antiseptic and is noteworthy for its purity, stable composition and the length of time which it preserves its therapeutic properties.

THE EFFECT OF TINCTURE OF FAT-FREE DIGITALIS
IN VALVULAR HEART DISEASE AND MYOCARDITIS
—AN EXAMPLE OF EACH.

G. E. PFAHLER, M.D., PHILADELPHIA, PA.

Resident Physician Philadelphia Hospital.

Case I.—M. C., age forty-two, gave a history of repeated attacks of periodical pain, shooting up to his left shoulder and down the arms to the fingers, lasting five to ten minutes and disappearing as suddenly as they came. Dyspnoea had been increasing during six weeks and up to July 21, 1899, when he showed marked evidence of loss of compensation. Dyspnoea became more pronounced, cardiac dullness was increased to the right, and very loud mitral systolic; and double aortic murmurs were heard. Patient was jaundiced, hepatic dullness extended three-finger breadths below the costal margin, hæmorrhoids became very troublesome, and the chest was œdematous.

He was placed upon Mr. England's preparation of Tr. of Fat-Free Digitalis, in 15 minim doses every three hours. Dyspnoea gradually disappeared, the liver assumed its normal size and the hæmorrhoids ceased to be troublesome.

On August 6th, the pulse fell to 64, and the Digitalis was stopped. The tracing made August 8th showed a very irregular pulse, which was accompanied by more distress on the part of the patient. Digitalis was again prescribed and its effect was shown by a tracing made two days later.

Case II.—C. C., age forty-four, admitted August 25, 1899, with marked dyspnoea, œdema of the legs, and a very irregular pulse, so much so that it was almost impossible to count it. The heart was hypertrophied, but no murmurs were present. The above preparation of digitalis was prescribed in fifteen minim doses every three hours. Two and one-half days later the heart's action became more regular and the patient comfortable. As in all cases in which I have prescribed this preparation there was no evidence of gastric irritations, and improvement was promptly noted.

The patient continued to improve, the heart's action became

stronger and more regular, and on September 1st he was allowed to get up. Since this date he has been working in the ward. The heart's action continues good, the digitalis has been gradually reduced and was entirely discontinued on September 15th.

This report is of value, as showing that the active principles are all preserved in this new preparation, while the objectionable ones have been removed, and at the same time serves as an example of the positive value of digitalis in the treatment of myocarditis.

FAT-FREE TINCTURE OF DIGITALIS.

BY ALBERT C. BARNES, M.D., PHILADELPHIA.

The many disadvantages attendant upon the administration of the official U. S. P. tincture of digitalis are in numerous cases so pronounced as to render the use of this important therapeutic agent practically impossible. Very often it induces profound gastric disturbances—nausea and vomiting; moreover it is sometimes slowly absorbed and may give rise to toxic symptoms due to its accumulation in the system. Its chief characteristic is its uncertainty and unreliability. Mr. Joseph W. England, Chief Pharmacist of the Philadelphia Hospital, has succeeded in preparing a fat-free tincture of digitalis which is entirely free from the disadvantages of the U. S. P. tincture. Mr. England's preparation as described by him in the *American Journal of Pharmacy*, July, 1899, is made by first exhausting the volatile and fixed oils and probably the nauseating and odorous principles of the digitalis leaf with purified petroleum benzine, and then neutralizing the free acids with ammonia. This fat-free tincture "as finally obtained, is a deep reddish brown, almost black liquid, keeping perfectly for years, of not unpleasant odor and pure bitter taste. It has not the acrid odor or taste of the official tincture and unlike the latter does not become turbid on admixture with water but remains transparent with any amount of dilution."

Dr. Daniel E. Hughes, Chief Resident Physician of the Philadelphia Hospital has subjected this fat-free tincture of digitalis to an extensive five years' trial in a large number of cardiac and nephritic patients who could not stand the administration of the official U. S. P. tincture. Dr. Hughes states as the result of his experience that the fat-free tincture is devoid of nauseating principles, is more promptly absorbed and is free from cumulative action. In experimenting with this tincture "the

main difficulty was experienced in the selection of bed-cases in which, while the use of digitalis was indicated, the physical conditions were as nearly *uniform* as possible, so that comparative results could be had. The cases chosen were mostly rheumatic with endocarditis. In one or two cases there was arrhythmia, which disappeared in fifteen minutes after the first dose. Patients were given the tinctures three hours after meals, when the stomach was practically empty. The fat-free tinctures one day, the official the next day. No food or water was taken during the time of administration. The beginning of each administration

SUMMARY OF RESULTS.

CASE.	FAT-FREE TINCTURE.			OFFICIAL TINCTURE.		
	First Effect, Minutes.	Full Effect, Minutes.	Work or Beats Reduced.	First Effect, Minutes.	Full Effect, Minutes.	Work or Beats Reduced.
1.....	15	75	8	30	60	6
2.....	15	60	7	30	75	8
3.....	15	60	5	30	90	5
4.....	15	45	8	30	75	6
5.....	15	45	6	30	60	5
6 h.....	15	45	12	30	60	5
7 h.....	15	45	10	30	60	6
8 h.....	15	45	8	30	60	8
9.....	15	45	8	15 ¹	60	10
10.....	15	30	6	30	30	2
11.....	15	—	9	30	105	9
12.....	15	45	6	30	60	8
13.....	15	45	10	30	45	6
14.....	15	45	3	45	105	6
15.....	15	60	8	45	45	
Averages.....	15	49	7.6	31	66	6.4

h—hypodermic cases; others, by mouth.

¹ Exceptional case. Patient was sleeping.

was so timed that there was no serious difference between the rate of pulse-beat when the giving of each preparation was commenced."

The non-irritating properties of this special tincture of digitalis are forcibly shown upon its hypodermic use, abscesses having never followed its use, while the official tincture almost invariably causes pain, swelling and abscess-formation on hypodermic use."

The appended table, excerpted from Mr. England's articles, illustrates the marked difference between the fat-free tincture and the official one, in the rapidity of absorption and real superiority of the former as a cardiac stimulant.

The advantages of a tincture of digitalis which is promptly absorbed and manifests its physiologic effects in fifteen minutes can hardly be over-estimated. It may mean in many cases the difference between the life and death of the patient. Furthermore this fat-free tincture can be given continuously to that vast majority of cardiac and nephritic patients, who have as part of the disturbances of circulation a passive congestion and chronic catarrh of the gastric mucous membrane, which precludes the administration of the official tincture. Another, not unimportant property of the fat-free tincture, is its free miscibility with water—an important item in facilitating absorption of the drug.

THE FOOD VALUE OF MALT AND THE DIGESTIVE VALUE OF THE ENZYME DIASTASE.

BY EDWIN ROSENTHAL, M.D., PHILADELPHIA, PA.

There can be no question concerning the food value of malt, particularly if the preparation represents, as it should, the completely digested grain freed from impurities and also possess the power to convert the starches of the food into the end products of digestion—dextrin and maltose—ready to be assimilated. It is equally true that, aside from the amount of alcohol contained, most of the liquid malt extracts are of doubtful therapeutic utility. They are possessed of feeble, or not any, diastasic properties, while the acids contained—generated during the process of fermentation—check the digestion of starchy substances. Solid malt extracts may possess diastasic properties, but the many disadvantages—taste, odor, viscosity, etc.—render them ill-adapted to the delicate individuals that usually require concentrated nutriment.

It is a well established clinical fact that malt preparations are of therapeutic value just in proportion as they possess the ability to convert starches—one of the most important foodstuffs, about two-thirds of the ordinary diet—into assimilable products. The writer, after studying the unbiased reports of analytical chemists concerning the nutritive values—as revealed by chemical examinations—and the diastasic power of the best known malt preparations, selected Maltzyme and its various compounds as being theoretically the best adapted nutrient and digestive adjuvant. The Maltzyme preparations were given a fair, unbiased clinical trial in about thirty cases. One of the striking features concerning Maltzyme was the freedom from the disadvantages which render malt administration disagreeable to delicate pa-

tients. The Maltzyme preparations are fluid, not viscid and gummy, they are free from disagreeable odor and taste, and are perfectly miscible with liquids. No complaints were noted, in the entire series of cases, that the preparations could not be taken.

Case I.—Youth, *æt.* 18, with incipient tuberculosis. The upper lobe of the right lung was solidified. Cough, sweats, emaciation, hectic fever were marked. There was absolute loss of appetite, so that no food could be taken. He was placed on Maltzyme with Hypophosphites four times daily. After a week's treatment the patient was able to take and digest a moderate amount of farinaceous foods, and he felt better in every way. This patient has been taking the Maltzyme all summer with the result that, although previously he was rapidly losing flesh and strength, he is now in a fairly good condition, is able to eat, and is much stronger and of heavier weight than before taking Maltzyme.

Case II.—Man, *æt.* 35, advanced pulmonary tuberculosis, cavity in the right lung, pronounced diarrhoea, and the usual constitutional symptoms. He was placed on nitrate of silver and creosote, and in addition was given Maltzyme with Hypophosphites. Previous to this he was unable to take food and was losing flesh and strength rapidly. There was noted an immediate improvement in all his symptoms, and he is now stronger and has more flesh.

A similar case (III.), a woman with tuberculosis in both lungs, was likewise benefited. The above three cases were severe tests for any remedy. The natural tendency in all was to rapid emaciation and loss of strength, whereas positive improvement in nutrition and general condition were noted in all.

Cases IV., V., VI. and VII. were patients who had typhoid fever ranging from several months to more than a year previously. Convalescence had been slow—in fact the patients were unable to recover their normal weight and strength. Two of them—men—had constant, distressing pains in the muscles of the legs resembling myalgia, and all of them were skeletons. All sorts of tonic treatment had been tried without appreciable good results. There was disinclination for food, and it seemed impossible to promote nutrition. All of these patients were given Maltzyme (Plain) four times daily in milk or beer, with the result that two month's treatment effected complete restoration in all. The myalgic pains are no longer present. In one of the patients—a young, unmarried woman—there was a marked increase in the size of the mammary glands.

Case VIII.—Woman, *æt.* eighty, with gout in the extremities. She

had no appetite and was unable to digest the smallest amount of starchy food. There was coated tongue, offensive breath, and general weakness. She was placed on Maltzyme (Plain) three times daily. Her appetite increased immediately, and she could eat and digest perfectly an ordinary diet of starchy food. Her nutrition is much improved.

Case IX.—Man, æt. thirty-five, with chronic gastric catarrh and a most pronounced and obstinate amylaceous dyspepsia. The relief in this case from the dyspepsia was nothing short of phenomenal; it was immediate, pronounced and permanent. Although he had been under various treatments for many months, Maltzyme (Plain) effected a complete cure in less than two weeks. He has had no recurrence.

Cases X. and XI.—Woman, æt. twenty-four, and man, æt. twenty-three, were exact duplicates of the previous case, except that in both there was also atonic dyspepsia of a marked degree. Digestion of all kinds of foods—nitrogenous and non-nitrogenous—was difficult, labored, and painful. There was also belching, pyrrhosis, depression of spirits. These cases had been under treatment for several months, but it seemed impossible to properly nourish them. They were given Maltzyme (Plain), half ounce after each meal. Improvement in the symptoms of dyspepsia was quite as marked as in the previous case. Although they were free from indigestion, even after taking starchy foods, Maltzyme was continued. Both patients were discharged cured with nutrition very satisfactory.

Cases XII. and XIII.—Boys, æt. five and six and one-half years respectively—both poorly nourished; loss of appetite, apathy, etc., peevish to a most marked degree. The treatment of both these cases was entirely unsatisfactory until they were placed on Maltzyme. In one case two bottles of Maltzyme (Plain) effected a radical change so that the child gained in flesh and strength and was completely restored to health. In the second boy—a puny, delicate individual—Maltzyme (Plain) was also given. He is now taking the fourth bottle; improvement has been marked and progressive.

In my entire series of cases the results were almost invariably as good as the above detailed cases.

Conclusions—Maltzyme is a powerful diastasic nutrient. It is acceptable to the stomach and causes a rapid increase in the patient's ability to take and digest food, and an increase in flesh and strength. It seems to possess peculiar properties in maintaining nutrition in those patients suffering from serious organic and constitutional diseases, such as tuberculosis. It is the best malt preparation—in diastasic and nutrient properties—which I have ever used.

CORRESPONDENCE.

GLYCERINATED VACCINE LYMPH.

Editor of Therapeutic Forum, American Gynecological and Obstetrical Journal:

Sir: There is an article in the September number of the "Therapeutic Forum" on vaccination, and especially on the glycerinated lymph that is so utterly at variance with my experience with it that I cannot let it go unchallenged, as I consider it very misleading, and would have a tendency to bring the whole subject into ridicule.

When the agents of Parke, Davis & Co. and of the Mulford Co. introduced those at the beginning of 1899 and gave me an account of the care exercised in the preparation of them, and the very mild symptoms manifested in contrast with the use of points, I very gladly availed myself of the use of them; but after a very careful test in primary vaccinations in children from six to ten years old, I have entirely discarded their use. The reports from this city give 95 per cent. of successful vaccinations (I do not know how reckoned), but if I get one success after three or four vaccinations I think myself fortunate. After three or four failures with the tubes I have success with the points. Why is this the case? One reason, I think, is that when the scarification is made, and the glycerinated lymph is applied, it causes an exudation of serum which will not dry in an hour, and if any dressing, sterilized gauze, cotton, adhesive plaster, is used at all, the result is the same, namely, failure. Another point in the article that the sore on the body is mistaken for vaccination, does not protect against smallpox, is true, but that is due to ignorance of the physician. That is a point emphasized by Dr. Henry A. Martin, and especially dwelt on in Vol. III. of the "Reference of the Handbook of Medical Sciences," in that most excellent article by Samuel W. Abbott, M.D.

One point that the agents especially dwelt on was the mildness of the symptoms, and, if inspection was not made by the tenth day, it could not be told. If such is the case, I failed to find it. In the few successful cases the symptoms were moderately severe, and where failure did occur persistence with tubes or points did bring success.

This is trifling away one's time, since these tubes are all warranted. I have had a good opportunity to test this at a mission. Last spring I would make weekly visits and vaccinate from ten to fifteen once a week. I would often find in ten cases not one success. So I have entirely discarded them as being too uncertain to risk.

MINNEAPOLIS, Minn., Sept. 21, 1899. J. W. RUTLEDGE, M.D.

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FRACTURES AND OTHER INJURIES OF THE CHILD DURING DELIVERY.

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This subject represents but a small corner of the large field of medicine. Omitted from works on surgery, barely hinted at in manuals of medical jurisprudence and briefly, if at all, referred to in works on pædiatrics and obstetrics, it would seem to be entirely lacking in importance.

A priori, the act of parturition should be for mother and child as physiological and as safe as the act of eating. Yet it often involves danger to the lives of both, and at its best it is for the mother an agony that cannot be adequately described. One can almost believe that the Primal Curse, "In sorrow shalt thou bring forth children," has been literally verified. Medicine has done not a little to diminish that agony and that danger. Such part of its work as is preventative, namely, the use of asepsis, is absolutely correct and scientific, but what is remedial, such as the use of chloroform and instruments, is not free from evil and is at best a makeshift.

The purpose of this paper is to safeguard the child by pointing out one class of dangers that not rarely complicate and embarrass its entrance into the world. Nor is the subject as unknown and as unimportant as at first glance seems to be the case. It has been a favorite topic for inaugural dissertations, and the number of monographs that have been written about it is surprisingly large. Its importance is far from slight. The physician's reputation is hazarded on every abnormal presentation of the foetus. It is often part of a doctor's profession to bear in silence misconception and criticism for accidents that are not due either to his action or his inaction. This is perhaps the case more

in obstetrics and surgery than in general medicine. He can find his consolation only in the thought that the laity cannot understand the problems set before him, and hence cannot judge justly; and he must have courage to still go ahead doing his level best. Some old teacher once said to his class: "A fracture is a simple injury, but if you don't set it right, you will be likely to meet your crippled patient at every corner on your daily rounds." A babe crippled or paralyzed by the act of birth will be much more of a reproach to an accoucheur than a dead-born one. Besides there is always the danger (cases have happened) that obstetrical mishaps may be made the basis of damage suits. Nowadays, when the avarice of lawyers goes about like a street-walker, seeking unholy alliance with the ignorance of the laity, such danger is not to be despised. But the gravity of obstetrical accidents for the physician is insignificant compared with their gravity for the child. A crippled frame, perhaps a ruined life, is involved. Paralysis, wry neck, so-called congenital hip dislocation, pelvic deformities that pass on the curse of birth to further generations can, beyond a doubt, frequently be traced to injuries inflicted upon the unfortunate victim at his or her birth.

Medical reports show that, apart from asphyxia, the following injuries have actually been inflicted upon the child in the act of delivery: Depression and fracture of the cranial bones; rupture of sutures and of sinuses; hæmatoma and rupture of various soft tissues (especially the sterno-cleido-mastoideus muscle); paralysis of facial and other nerves; fracture of vertebræ, jaw, ribs, humerus, clavicle, scapula, pelvic bones, femur, tibia, and fibula; separation of epiphyses of all these bones; dislocation of shoulder and hip-joints; rupture of sigmoid flexure; rupture of liver and other internal organs. In order to determine exactly what injuries do occur in delivery, Carl Ruge made dissections of 64 bodies of infants that died *in partu*, or shortly afterwards. All were cases of breech presentation, either primary or secondary (that is, after version); 38 of them were found to have one or more of the above-named lesions. That such a variety of injuries is possible in what is meant to be a physiological process is a deplorable fact, but it is only equivalent to saying that force will make traumata, whether applied by a railroad train or the jaws of a forceps or the resistance of a narrow pelvis. A study of these injuries shows that some are entirely spontaneous, due to Nature's effort to overcome obstacles for which she may or may not be responsible; some are caused by the accoucheur designedly as the choice of two evils; and some, though few, are due to errors of judgment on his part, or, more culpably, perhaps to his inattention or

haste. Persons who think superficially, particularly among the laity, will attribute such mishaps to the incompetence of the obstetrician, but all who have investigated the subject will judge far more leniently, and I agree with Rosenthal, who says that "frequently all the skill and ingenuity of a well-trained and competent obstetrician are insufficient to prevent them." Speaking of his own obstetrical accidents, this frank and honest reporter says that "despite the precautions and care taken, injuries would result which we were powerless to avert," even though he had the hospital advantages of anæsthesia and competent assistants.

The percentage of injuries is not easy to determine. This is due to a peculiarity of Nature which strikes most people dumb when there is question of confession, but hands them a trumpet when there is opportunity for self-praise. The doctor who "never lost a case" also practises obstetrics, and if he should accidentally notice a mishap, why—the serpent or the apple or the woman (especially the woman) was to blame, and so he is charitably silent about the affair. Another reason is that the injuries inflicted are frequently serious enough to cause the death of the child, and no motive except possibly a scientific one remains for close investigation.

Breech presentations furnish the chief occasion of injury to the infant, particularly induced or secondary breech presentation. According to the statistics of Mannheim Hospital,* primary breech presentation occurs in $2\frac{4}{11}$ per cent. of confinements, and version (induced or secondary breech presentation) was found necessary in exactly the same percentage, $2\frac{4}{11}$. Ruge's dissections showed that in 21 cases of primary breech presentation, 11, or 52 per cent., were injured, and in 42 cases of secondary breech presentations, 27, or 64 per cent., were injured. Rosenthal's experience was 9 injuries (omitting asphyxia) in 24 secondary breech cases, or 38 per cent., and 7 injuries (excluding 5 cases of asphyxia) in 27 primary breech cases, or 26 per cent. These figures, not being based on post-mortem examinations, are naturally smaller than reality. Rosenthal adds that "when the fœtus succumbs to the manipulations I feel sure that death is due more frequently to injuries inflicted than to asphyxia." Fösterling has published his study of the records of confinements in the hospital and out-door dispensary work in Halle. In 3982 deliveries in the hospital, 51 cases (1.28 per cent.) of injuries were noted. The breech presentations numbered 182, with 7 per cent. of injuries; and 117 head presentations required forceps, resulting in 7 cases (6 per cent.) of paralysis. In 6171 confine-

* See *Obstetrics*, April, 1899; The Mannheim Method of Conducting Labor by D. J. Doherty, M.D.

ments in out-door practice, 165 (2.67 per cent.) injuries were recorded. There were 989 breech presentations, with 77 (8 per cent.) injuries; and 626 head presentations needed forceps, resulting in 56 (8.9 per cent.) injuries. These data of Försterling are clearly unsatisfactory because based simply on written records without evidence of accuracy or completeness. The figures of Ruge and Rosenthal pertain to breech cases, and do not include cephalic presentations in which injuries may occur spontaneously or may be produced by instruments.

A rough idea of the frequency of serious injuries may also be gathered from a brief summary of cases of obvious and easily recognizable traumata (for example, of long bones) which have been reported in medical literature.

Smellie (1764) was probably the earliest reporter of these cases. in the third volume of his "Midwifery," consisting of notes on nearly a thousand confinements, he mentions two fractures of the humerus and three fractures of the femur. One humerus was broken in utero whilst Smellie was making a version, the child being small and the delivery easy, and this he attributed to the thinness of the child's bones. The other was a case of placenta previa. Of the fractures of the femur, one occurred in his own hands and two in the practice of his assistants. One of these assistants was much discouraged because the child died later from the inflamed fracture, and Smellie says: "I told him that such things would sometimes happen even to the best and most careful practitioners." He also had a dislocation of the humerus which he did not recognize till several months later. "This," he says, "was the only luxation that ever happened to me in practice where the child was alive."

Osiander (1825) reports an instance of both femurs being fractured. During the act of extraction an alarm of fire was given, and fright caused the woman to make a sudden movement which snapped both bones.

In the *Verhandlungen der Gesellschaft für Geburtshilfe*, at Berlin in 1852, Diesterweg reported a fracture of the humerus which occurred in a case of prolapse of the arm. In the ensuing discussion, Credé told of a fracture of the femur in his own practice caused by lifting the body during extraction too strongly against the pubic arch.

Michaelis ("Das Enge Becken," 1851) mentions four fractures of the clavicle that he had designedly caused in difficult cases.

Pajot, in 1853, published a thesis on this subject containing a number of cases culled from earlier literature. Thudichum (*Berl. Illustrirte Med. Zeitung*, 1855) reported two cases of separation of upper humeral, one of upper femoral, and one of lower femoral epiphyses. Ahlfeld

presented to the Obstetrical Society of Berlin, in 1872, a specimen consisting of two thoracic vertebræ which had separated at their epiphyses in an extraction. The child had lived nine days, but the injury was not recognized till the post-mortem. At the same time, Schatz reported that he had had one fracture of the humerus and six of the clavicle in between 40 and 50 versions.

In 1874, Carl Ruge read before the Berliner Gesellschaft für Geburtshilfe the best exposition of the subject up to that date. In his dissections (already mentioned) he found the femur fractured twice, the humerus four times, the clavicle five times, separation of the clavicular epiphysis once, of the upper humeral once and of the tibial once.

Kuestner used our subject as a thesis for his inaugural address at Halle in 1877. After quoting from Lachapelle a case of separation of the tibial epiphysis; from Fritsch a fracture of the femur and one "above the malleolus;" from Seeligmüller a fracture of the lower part of the scapula, and two of the neck of the scapula; from Ciezlewicz a separation of the epiphysis of the collum scapulæ; from Duchenne four infra-spinous luxations of the humerus; from Gurlt a separation of the upper humeral epiphysis, and from Hecker a fracture of the humerus, he gives out of his own practice the following mishaps: Fracture of the femur, 1; of the humerus, 1; of the clavicle, 1; separation of epiphyses of upper humerus, 4; of caput colli, 1, and of tibia, 1. His cases occurred chiefly whilst he was in the service in the hospital at Halle. The clavicle was fractured whilst reaching for the extended arm, even before he seized it. The fracturing force was the lateral pressure upon the shoulder by his hand in the narrow pelvic space. The fracture of the humerus occurred in a case of placenta previa, but Kuestner says that a more self-possessed accoucheur might have avoided it. He describes the occurrence of the fracture of the femur as follows: He was called to a young primipara who had been twelve hours in labor, the breech presenting. He saw no indication for interfering by bringing down a foot, and so waited four hours longer, when the breech became fixed in the pelvis. After another hour the pains grew weaker, and he began to fear tetanus uteri. He hooked a finger in the groin, but was unable to bring the breech nearer. He then passed a fillet around the upper hip and drew with great force. This brought some progress, and he was able to insert two fingers over the fillet. Thus pulling, the breech suddenly yielded, and a snap which was audible to the husband in an adjoining room indicated a fracture. The leg was then drawn out and the child extracted.

A. R. Simpson, Professor of Obstetrics at Edinburgh, read in 1880,

before the Obstetrical Society of that city a paper in which he states that a year before he had reported a case of placenta previa, and had described the child as having extensive lacerations and bruises of the soft parts, great swelling of the left leg which hung stiffly from the pelvis, ecchymosis of the upper thigh and abrasions at the malleoli. He had then thought that there was no injury of bone or joint. He had, however, in the meantime, had a similar case, and the child being dead he was able to make a thorough post-mortem examination. Deformity or crepitation was not apparent, but the foot hung loose to the tibia, and there was abrasion over the malleolus internus. The dissection revealed separation of the epiphyses of the upper femur, lower tibia, and lower fibula in the right leg, and of the lower tibia in the left leg. He adds: "On looking back over my own practice, I fancy such fractures as I have described must have taken place in one or two cases where I was well aware of a kind of a 'chuck' sound or sensation—I can hardly tell which. At the time I did not think more of it as the children were dead, but I supposed that some ligament had torn."

Ten-Eyck (1880) reported to the Albany Medical Society the following case: A primipara, æt. 20, was in labor with child in breech presentation. The nates became impacted at the pelvic floor and did not yield to severe pains. He inserted a finger in each groin, and after six or seven gentle efforts, he heard and felt a crack. One femur had fractured. In the discussion of the report, Collier reported a similar case in his practice, and Van der Veer stated that he had met in consultation more cases of fracture of humerus than of femur, one of the former being in the practice of a distinguished obstetrician, and that "the accident is liable to occur to any one and cannot be avoided."

Belluzzi (*Mem. dell'Accademia delle Scienze*, 1881) had a case of high impaction of the breech. He was unable to bring down a foot, or to insert his finger in the groin, so he used the blunt hook. A fracture of the femur resulted. In another case he fractured the horizontal ramus of the pubes, recognized it by the swelling and crepitation, and verified it by a post-mortem some days later.

Johnson (*Australian Med. Gazette*, 1883) had a compound fracture of femur due to the blunt hook in high impaction of the breech.

Parvin, in 1887, read a paper before the Medical Society of Philadelphia, and reported that in one case of version and extraction he had a separation or fracture of the cervical vertebræ. In the discussion, Leaman said he had once fractured the inferior maxilla, and once had met a fracture of the clavicle. Goodell showed a pathological specimen, a humerus which he had fractured and of which he was proud because

he had saved the child's life by fracturing the arm. It died a year later of cholera infantum, and he obtained the specimen which showed perfect union. He also reported a case of fractured clavicle in spontaneous head delivery. He added: "A child presenting by the breech is a child drowning, and help must be sped—help at all hazards." Longaker also reported a fracture of the femur and one of the humerus. Lusk said he considered it justifiable to break the arm if necessary to hasten the delivery where the space was small or the arm was displaced.

In the *Archiv für Klin. Chirurgie*, 1890, Von Büngner investigated cases of pseudo-arthritis that had been presented to the clinics of Halle and Leipzig from 1874 to 1890. Whilst not a few were probably due to fracture at birth, in five fresh cases he was able to trace up the history and verify that this was the fact. One was a spontaneous head-birth, the child being large and the maternal pelvis small. The pressure of the tibia against the pubes had caused a fracture which was neglected and led to pseudo-arthritis. The other four were breech presentations.

Remy of Nancy, France, reported a case of spontaneous head delivery in which both femurs were fractured. The mother was healthy and well built, but the child was found to have ankylosis of both hips and both knees, a condition that easily explains the remarkable accident.

Godfrey of Galena, Ill., reported in the *Chicago Medical Review*, vol. 5, a separation of the humeral epiphysis in cephalic presentation. It occurred whilst he was aiding the birth of the shoulders with his finger in the axilla.

Heyrich reported in 1890 that he had made extraction in a case of foot presentation with prolapse of funis. The right arm was behind the head, and in freeing it he had broken the clavicle. Thirty hours later the infant was found dead in its cradle with a large soft tumor extending from the lower jaw to the right thorax. Post-mortem examination showed that an end of the broken clavicle had made a minute wound of the costal and pulmonary pleuræ, which led to pneumo-thorax and emphysema of the skin, and finally to atelectasis of the right lung.

Detwiler published in the *International Medical Magazine*, 1893, the case of a child born spontaneously in head presentation with both femurs fractured. He has kindly written me further particulars about this case. Both parents are healthy and well built, and the three other children were also perfect. The babe in question had, and still has, fragile bones, which have repeatedly been fractured. This condition of osteomalacia intra-uterina was perhaps due to the mother's efforts to reduce her corpulency by dieting whilst carrying the babe.

Hoffa exhibited in the Physikal. Med. Gesellschaft of Würzburg, 1897, a boy with pseudo-arthritis about a hand's breadth above the right ankle joint. The birth had been spontaneous, and Hoffa considered that the fracture resulted from pressure of the tibia against the pelvic ring.

In the *Medical Record* of last year Abraham reported a case of dislocation of the hip-joint in powerful traction for breech delivery, and a double dislocation of the jaw caused by traction on it whilst liberating the aftercoming head.

Hahn, in the *Prag. Med. Wochenschrift*, 1898, records a luxation of the right shoulder and a separation of the lower epiphysis of the right femur in a version and extraction case.

I have already quoted Rosenthal, who found 3 fractures of humerus and 1 of clavicle in 24 cases of version and extraction; and 1 fracture of humerus and 3 of femur in 27 cases of primary breech presentation. Likewise have I quoted Försterling, who found in the records of 1169 breech cases 5 fractures of humerus, 6 of femur, 3 of clavicle, 4 of jaw, 2 of malleolus, 1 dislocation of hip, and 1 separation of upper humeral epiphysis. To this series of obstetrical mishaps I have to add two from my own experience. In February, 1896, I was called to a midwife's assistance. The parturient woman, who was middle-aged and stout, had already had eleven children and two miscarriages. Her labors had always been difficult, and two of them required forceps. The case was a placenta previa, and there was excessive hæmorrhage which required prompt measures. I made a version and extracted. In bringing down one arm I fractured the humerus.

The second case occurred a year ago. The mother, who is slightly built, had three children previously. The breech presented, but though the pains were strong, it remained impacted at the floor, finally becoming blue-black in color. I inserted a finger at the upper groin in order to assist and felt a bone snap. The leg then came down easily, and served as a handle for traction. The delivery of the body and head was quite difficult; the child was asphyxiated, but was finally resuscitated.

This summary of reports enables us to state that serious injuries to the infant in delivery are not rare, and that they may happen to any practitioner. It further throws some light upon the mechanism of the injuries, and leads to an understanding of the causes which produced them.

A number of experiments have been specially made by Pajot, Delore, and Kuestner for the purpose of investigating the mechanism of such injuries, and these will be briefly summarized in this paper. There are,

however, several questions which ought to be considered in order to reach a complete understanding of the subject.

First, it may be questioned whether any of the injuries referred to, and if so which, can be produced spontaneously; that is, by the forces of Nature alone, and without intervention by the accoucheur? That a narrow pelvis, actually or relatively to the child's size, may cause facial and other paralyses, or even fracture of the cranial bones, is conceivable; but that other injuries, particularly of the long bones or the sheltered organs, should happen spontaneously even in normal pelvises and in normal children is not so credible. Where a condition of osteomalacia exists, as in Detwiler's case, or in the famous case told by Chaussier, in which over 100 fractures were found, fracture may of course occur, either in the womb through traumata or muscular movements, or in the act of birth by pressure of the birth-canal. Such accidents were at one time attributed to "maternal impressions," and it was explained that the pregnant woman had witnessed some criminal broken upon the wheel. This view was stoutly resisted by a savant, who advocated in a paper before the Faculty of Medicine in Paris, in 1813, the theory that they were due to the concussions of powder explosions so frequent in the battles of that period. We, however, will be satisfied with the learned name *osteomalacia intra-uterina*, and understand how this condition might result in fracture or other injury from any simple trauma, abrupt movement, chill, or convulsion on the part of the mother, or from pressure between uterine expulsive efforts and resisting canal, and much more easily, of course, from the manipulative efforts of an accoucheur.

That a fracture may occur in a spontaneous head delivery is certain from a case reported by Goodell during the discussion of Parvin's paper. The patient had strong pains, but the head which presented did not descend. "Suddenly, during a severe pain, a hand shot out of the mother's anus without tearing the perinæum. Whilst gazing at this in amazement, another pain came on; there was an audible snap, the hand suddenly disappeared from the anus, and the child was born with a fractured clavicle." The mechanism of the accident was as follows: The arm of the child became displaced behind its neck; as the head descended, the hand was forced through the recto-vaginal septum and out through the anus; with farther descent, the arm was driven up along the dorsum, necessarily twisting and breaking the scapula. This singular case negatives the opinion of Von Hoesslein that fracture of the clavicle can occur only in assisted deliveries, and also the opinion of Rosenthal, that "in cephalic presentation the pelvis of the mother being

of normal size and the child of normal size and weight and no impediment in the way, injury to either mother or child is out of the question."

Another question concerns the possibility of causing dislocations by traction or otherwise in delivery. It has been asserted that separation of the epiphysis would occur rather than dislocation. For example, in his recent elaborate work on "Traumatic Separation of the Epiphyses," Poland says: "It is questionable whether many, if not all (such lesions), were not due to a diseased, or at any rate an altered, condition of the bones. Cruveilhier, in 1849, declared with much veracity that they were due to putrefactive changes following the death of the child before birth." "It is true that attempts to produce dislocations at the hip by traction on the limbs of the foetus only separate the cartilaginous ends of the bones. Queretin and Champmas were never able to produce dislocations in the new-born." The incorrectness of this assertion as an absolute statement will appear from the experiments to be detailed.

Brodhurst, in Holmes' "Surgery," studies the subject of congenital dislocation, and considers that the flexed condition of the limbs in foetal life causes the heads of the femurs to press against the inferior and posterior parts of the capsule. He thinks that simple extension and much more traction with hook or finger might easily cause the ends of the bones to slip out of the shallow cotyloid cavity. Whence it would follow that congenital dislocations are often at least due to the act of delivery, and that they are connate rather than congenital. At the meeting of the Berlin Obstetrical Society, in 1852, referred to above, Groeschen spoke on this subject and stated that Velpeau considered these luxations to be connate or acquired in delivery, whilst Dupuytren held them to be due to intra-uterine conditions, and hence truly congenital. This phase of my subject presents a fascinating field for speculation, experiment and observation, but it is too vast for consideration here. I will only say that if congenital hip dislocations are really congenital, we should find them also in cephalic presentations and in normal deliveries. And I would suggest that the time has arrived for doctors in returning reports of births to the public authorities to give specific details of presentation, anomalies or other special features of each case. Accurate statistics and information of this kind would enable us to mark out clear and definite limits of knowledge and perhaps enable us to cast into the medical lumber-room of discarded notions words like congenital, inherited, idiopathy, and others which are often mere cloaks for ignorance.

The experiments of Pajot, Delore, and Kuestner were made with

cadavers of new-born infants. The two former merely studied the resisting powers of the tissues, whilst the latter also endeavored to imitate the act of Nature by placing the cadavers in a phantom pelvis and applying force in the directions found in delivery. I will state their results as given for the long bones.

Clavicle.—The clavicle, if suspended horizontally, with support at both ends, will break in three minutes under a weight of three kilos. It cannot be broken by strong traction on the arm downwards, nor by sweeping the extended arm down across the face. Marked elevation of the shoulder so as to make the clavicle nearly parallel to the axis of the body will tear the costo-clavicular ligament and separate the external epiphysis, but such an elevation cannot occur in the act of delivery. Freeing the arm across the back will put such a strain on the sterno-clavicular ligament that the internal epiphyses will separate. Lateral pressure on the shoulder can fracture the clavicle in its outer third. Strong traction on the head may separate the internal epiphysis by stretching the sterno-cleido-mastoid muscle. Therefore, fracture of the clavicle or separation of its epiphyses may occur in delivery in four ways: First, by direct impact, in delivering the aftercoming head, when the fingers hooked over the shoulder press on the clavicle. Second, by lateral pressure on the shoulder when the accoucheur's hand is pressed up in the narrow space in order to grasp the infant's extended arm, or, having grasped it, by oblique pressure on the humerus. Third, by sweeping the arm across the back. Fourth, by traction on the body to extricate the aftercoming head.

Humerus.—The resisting power (tensile strength) of the humerus according to Pajot is 35 kilos; but this force not only separated the epiphyses from the diaphysis, but also tore the soft parts. If laid horizontally on terminal supports, Kuestner found that it would bend in two minutes under a weight of four kilos, the epiphysis would separate without tearing the periosteum under eight kilos, and the bone would snap in two at the point where the weight is hung under 11½ kilos in four minutes. Hence the *locus minoris resistentiæ* is at the junction of the upper epiphysis and diaphysis. Fracture of the humerus occurs exclusively (according to Kuestner) whilst freeing the extended arms in breech presentation. The case of Dr. Godfrey (above cited) shows that it may also be fractured in head presentation by insertion of the finger in the axilla whilst endeavoring to extricate the shoulder.

If after version (as is usually the case) the arms have become extended above the head, they can be freed either by sweeping them in succession over the face or more rarely (when the forearm is caught be-

hind the neck) by sweeping over the back. In sweeping over the face the elbow may catch against the pelvic bones and then the humerus may break. By sweeping across the back either the clavicle or humerus will fracture. In performing this manipulation one may rotate the humerus inwards or outwards. Kuestner made 20 experiments with outward rotation and got separation of the humeral epiphysis 16 times and fracture of the humerus 3 times. In 11 experiments with inward rotation, the epiphysis separated once, the diaphysis fractured twice, the scapula fractured once, and 7 cases were uninjured. Hence, if the arm has to be liberated by sweeping across the back, the humerus should be rotated inwards, though this manipulation has the special disadvantage of pressing on the brachial plexus and causing temporary paralysis.

A real luxation at the shoulder (that is, when the head of the humerus tears through the capsule and leaves its socket) is practically impossible; the epiphysis will sooner separate. But such a separation, especially when the periosteum is torn so that the two parts of the bone are not held in continuity, may be easily mistaken for a dislocation, and the ensuing disability of the arm might be erroneously diagnosed as due to paralysis of the supra-scapular nerve.

Femur.—The femur is broken directly by transverse or oblique pressure, and by traction in its longitudinal axis, and indirectly by strain of its ligaments in rotation. The first usually occurs when the finger, the fillet or the blunt hook is used in breech presentation to make traction on the groin. If the force is expended entirely on the short neck of the femur, fracture is very unlikely, but dislocation or separation of the epiphysis may occur. Hence, if the hook is not correctly adjusted, or if traction is not made in the right direction, a fracture will ensue. If, whilst the finger or hook is *in situ*, a pain should suddenly shoot the breech through the narrow pubic arch before the finger can be extricated, the transverse force and the narrower space may cause a fracture. That is what occurred in my case.

In longitudinal traction, Pajot used 63 kilos for nine minutes to loosen the lower epiphysis, but the soft tissues also tore. Kuestner found from 10 to 32 kilos for four minutes sufficient—the range being due to the condition of the several cadavers. When traction is made in the longitudinal axis, any twisting or hyper-extension of the limb causes the injury to occur much more quickly. An infant cadaver inserted in a phantom pelvis withstood a weight hung from the groin of 14 kilos for five minutes; but as soon as the leg was moved a little out of the vertical line the femur snapped $1\frac{1}{2}$ cm. from the great trochanter.

Forty kilos hung for fifteen minutes did not cause a dislocation, but when the hook was so adjusted that the force acted entirely on the short neck of the femur, dislocation quickly followed.

Tibia and Fibula.—These bones are seldom exposed during delivery to any other force than traction in their long direction. Kuestner hung 10 kilos to the foot and after four minutes the lower epiphyses of both bones separated, tearing the periosteum, whilst the upper epiphyses were loosened, but the periosteum remained intact. Besides excessive force in a longitudinal direction as a cause of the fracture of these bones, they may also break from transverse pressure of a narrow pubic arch. Such were Von Büngner's and Hoffa's cases of pseudo-arthritis. But perhaps the most frequent cause of injury to these bones is the manner in which the accoucheur grasps them in order to make traction. If seized with opposing fingers and thumb, transverse pressure, especially when the knees are still caught, may cause separation of epiphysis or green-tree or complete fracture. Kuestner thinks that loosening, if not complete epiphyseal separation, in these bones is far from seldom.

As an ætiological factor, then, force varying in amount, duration, and direction occupies the first place. But resistance which depends on the relative proportions of the child and the maternal pelvis is also to be considered. In his 27 dissections of cases of secondary breech deliveries, Ruge studied out this point. He ascertained that fracture of the clavicle occurred as frequently, whilst rupture of the vertebræ and fractures of the humerus, femur and mandible occurred more frequently in normal pelvis and normal or small children than in small pelvis and large children. Hence it follows that resistance is much less of a factor than force.

Force necessarily accompanies manipulative interference, which occurs either as version, extraction, or liberation of the arms; and of these the act of extraction is the most frequent cause of injury. If it were always remembered that extraction is not a necessary sequence of version, that the indications calling for version do not also require extraction, many accidents would be avoided.

The indications for version are of three classes:

I. Those conditions which demand rapid delivery: (1) Eclampsia, (2) concealed hæmorrhage, (3) placenta previa.

II. Conditions which simply jeopardize the child's life: (4) Face or brow presentation, (5) prolapse of funis, (6) prolapse of arm or foot alongside of head.

III. Conditions which make unaided delivery improbable: (7) High arrest from inertia uteri, large head, constriction of uterus, Bandl's

ring or rigid soft parts, (8) pelvic deformity, (9) transverse presentation.

In only two of these conditions, *viz.*, 1 and 2, is it necessary that extraction should follow version; in 3 complete version is sufficient to stop the hæmorrhage, and in the others either forceps may be used instead of version or version may be avoided by suitable measures. In short, extraction should not follow version if mother and child are doing well, if the funis is all right, and if the presenting breech is not too blue. The completion of the delivery should be left to Nature. But if extraction must be made, the following points are suggested: (1) Traction should be made intermittently, at regular intervals or during the pains. (2) It should be supported by external suprapubic pressure by an assistant. (3) The hands should grasp the foetal parts as near the vulva as possible. When grasping the feet, the heels should lie in the hollow of the hand, the middle finger inserted between the two tibiæ and the other fingers outside the fibulæ. In grasping the legs the thumbs lie parallel along the calves and the fingers along the anterior surface. (4) There should be no twisting, and the direction of traction should be downwards and backwards till the anterior hip is visible, then horizontally with lever movements to lift the posterior hip over the perinæum, and then again backwards to free the anterior hip. (5) The blunt hook should never be used on the living child. Happily, forceps are no more made with one handle terminating in a hook. (6) In liberating the extended arm it should be grasped as near the wrist as possible, because it will thus more easily flex at the elbow. It would be a serious error to grasp it between shoulder and elbow. (7) Sweeping the arm over the back is rarely necessary, but if it is, the humerus should be rotated inwards. (8) The finger should never be inserted in the axilla to help out the shoulder. A soft catheter would be better, but I feel sure that all interference is wrong, for if the head has passed through, the shoulders necessarily must. If one has not patience to wait, changing the position of the mother to the side corresponding to the infant's back may help to dislodge the shoulder. (9) In breech presentation the forceps are safer, quicker, and easier than any other method. (10) Patience is the best of all forceps; but if the woman won't wait and the doctor is in a hurry, steel forceps are sometimes, though rarely, allowable.

But a wise and faithful accoucheur will endeavor during the course of the pregnancy to foresee and anticipate conditions which make manipulative interference necessary. Urinary examinations may forecast eclampsia. In contracted pelvis he will arrange for premature delivery as soon as the child is safely viable, without forgetting the al-

ternative of symphysiotomy. In relaxed abdominal and uterine walls, he will have the woman wear an abdominal supporter so as to limit the movements of the foetus. He will preserve the amnionic sac as long as possible, and if he does puncture it, will do so not at its most dependent part, but laterally as far up as he can, thus avoiding a strong gush of fluid and possible prolapse of the funis. If he must make a version, he will first try posturing and external manipulation. And generally he will not be hasty, but will trust to Nature as long as he has no real indication for interference.

After delivery, the babe should be carefully examined, especially if extraction or liberation of the arms was practised. Too often, fractures, dislocations, or separation of epiphyses pass unnoticed, or if noticed later are attributed to carelessness of the nurse in handling or dressing the child. Smellie is very frank in his admissions in this respect. He concealed the fracture of the humerus which he had made in version, and told the parents that it was "only a slight strain." For the dislocation of the shoulder which he did not recognize for some months after birth he blamed himself bitterly. "It was entirely owing to my neglect in not examining the child after delivery, when the limb might with ease have been reduced. This was a caution to me ever afterward, and should be to every one, to examine carefully the extremities and every part of the child's body after such deliveries." Schatz states that fractures of the clavicle escape recognition because callus forms and crepitation ceases by the third day. If the arm was freed across the back, inward rotation of the humerus will be a sure sign of fracture or epiphyseal separation.

If an injury or dislocation is found, it should be treated according to usual surgical methods, though some modifications must be introduced to suit the condition and needs of the infant, especially in fracture of the femur. The difficulty is to get counter-extension. Smellie advised simple bandaging and placing the child on its side on cushions high enough to reach the mother's breast. Diesterweg used paste-board splints. Credé after several attempts at fixation finally passed a bandage under the knee and kept the thigh flexed against the trunk for fourteen days.

Johnson used an ingenious device for getting extension and counter-extension. He laid the baby on a cushion in a rocking-chair from the back of which several rods had been removed. He suspended the limb, splinted with cardboard, to a rod nailed transversely on the arms of the chair. This apparatus served as a cradle, allowed access to the infant for toilet purposes, and kept the limb immovable.

Detwiler used pasteboard splints with a sodium silicate bandage extending from the feet to the chest. Extension and counter-extension were supplied by a shingle splint and adhesive-plaster strips. Union without deformity occurred in eighteen days. Godfrey treated his case with pasteboard splints, resulting in complete recovery in three months. Ten-Eyck used the same method. Collier not only used external and internal pasteboard splints, but fastened the leg to its fellow. Union was complete on the fifteenth day, and when four and a half years old the child walked without shortening or deformity. I treated my case first with pasteboard splints and plaster bandage, but found it impossible to keep the parts clean. So I flexed the thigh on the abdomen and kept it *in situ* by a plaster bandage around the waist. The mother recently informed me that the broken leg is straighter than the other one.

In discussing Ruge's paper on breech presentations, Martin, Sr., made the following suggestions which are worth quoting:

"1. When the os is fully dilated and the waters have broken, the attendant should with the hand externally hold the child's head against its breast. This helps uterine contraction and keeps the arms folded on the breast, thus avoiding extension.

"2. As soon as the breech is out of the vagina, begin expression, and aid it by downward pressure with the fingers of the other hand on the child's upper jaw.

"3. The fingers on the upper jaw should help turn the head on its longitudinal and transverse axes.

"4. Don't begin expression unless danger to the mother or child is present, as shown by auscultation, pulse rate, funic beat, convulsions, or hæmorrhage.

"5. If expression fail, use the forceps."

In conclusion, I would say that the chief motto of an obstetrician should be *Festina lente*—make haste slowly. Most of the mishaps of obstetrics occur because the physician is led to interfere, his judgment and self-possession being over-powered by the pleadings or scoldings of the parturient woman and her sympathetic friends. Women want babies, but they don't want to pay Nature's price.

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INCONTINENCE OF URINE: REPORT OF A PECULIAR CASE.*

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On September 22, 1899, a woman came to me complaining of incontinence of urine. The patient was 38 years old and gave the following history. Up to the time of her marriage she had been perfectly well. Her menstruation had begun at her thirteenth year and returned regularly every month, was painless and normal as to time and quantity. She had never had any leucorrhœa. She had never been pregnant. From the time of her marriage she began to lose control over her bladder and this condition became worse and worse so that at the time when she came to consult me complete incontinence had existed for over two years. The patient could not hold her urine at all. During the day she had to wear napkins which had to be changed constantly, and during the night she had to rest most of the time on a bedpan. The patient managed to keep herself comparatively free from the consequences of the constant trickling of urine by practising the most scrupulous cleanliness. But the condition became so annoying and the therapeutic efforts of her physicians had proved so fruitless that the patient was ready to undergo any kind of treatment that promised relief.

On examination I found a strongly built woman with healthy heart, lungs, liver, spleen. The urine which we collected in a bedpan contained neither albumen nor sugar, some urates, a few epithelial cells and some round cells. Specific gravity 1012. The urine was clear, color of straw. The skin around the vulva showed some irritation which disappeared after a day's treatment with a dusting powder. The labia majora and minora and the urethra showed no inflammatory changes. The hymen was torn and the vagina admitted one finger easily. Uterus, tubes, ovaries, ligaments, and pelvic connective tissue without abnormalities. No discharge from uterus, vagina, urethra, or labial glands. Through a catheter introduced into the bladder about ten c. c. of urine escaped. Cystoscopic examination with the electric cystoscope showed practically normal conditions, the ureteral orifices normal. It was noticed that the

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water with which the bladder was filled for the purpose of the cystoscopic examination dripped away by the side of the cystoscope. After removing the cystoscope I tested the caliber of the urethra with my little finger and could immediately introduce this finger to one-half its length and on trying the index it entered the length of its distal phalanx.

The diagnosis was, therefore, incontinence of urine in consequence of a dilated condition of the urethra. But what had caused the dilatation? The patient denied having undergone any operative procedure as instrumental dilatation of the urethra. On questioning her a little more closely I found out that the incontinence was always particularly troublesome during and after intercourse and that the sexual act often was extremely painful. She also informed me that her husband had had an accident before their marriage. On questioning and examining the husband I elicited the following: Fourteen years ago the husband had been caught in a thrashing machine which had pulled off his trousers together with the skin of the scrotum and penis. A plastic operation was performed on him and he showed me the result. The scrotum is a smooth piece of skin, rather tight. The skin of the penis is retracted so that the glans penis is entirely exposed and the skin of the entire penis is on the stretch and contains considerable scar tissue. When erection takes place the penis bends downwards, sometimes more, sometimes less.

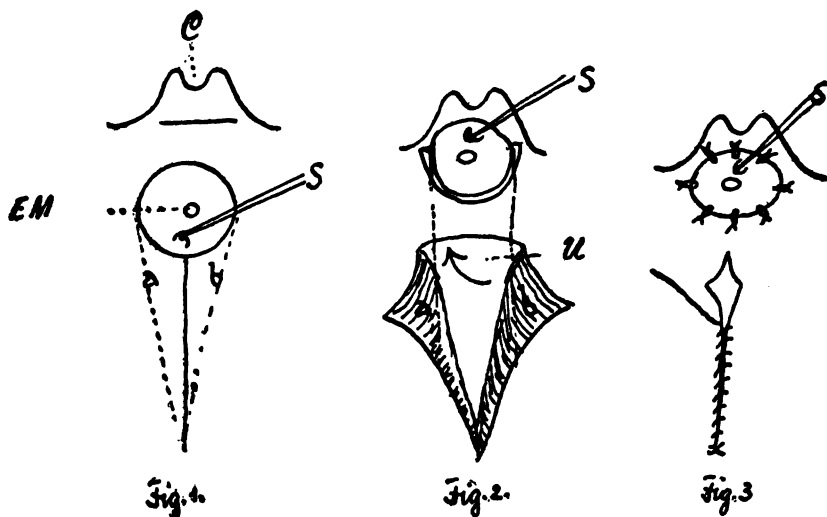
I concluded from these findings that the wife's urethra had become dilated in consequence of this abnormal condition of the penis. I have not been able to find a case with a like ætiology in the entire literature on this subject. Cases of dilatation of the urethra by the penis have been reported repeatedly where there was congenital absence of the vagina or occlusion of the hymen. I have myself observed such a case of complete incontinence due to congenital absence of the vagina and dilatation of the urethra by coitus per urethram. In many cases of dilatation by coitus per urethram incontinence was absent, but in the case of absence of the vagina it was as marked as in the case which I am reporting here.

The question of treatment had to consider several problems. The first task was to stop the incontinence, the second to prevent its recurrence under the peculiar ætiology of the case. The first indication did not seem to present any particular difficulties. The operation of Frank of Cologne (*Centralblatt für Gynæcologie*, 1882 and 1894) would probably have fulfilled this indication completely. It consists of two acts, excision of a wedge-shaped piece of the entire wall of the urethra anteriorly more especially infolding the bladder over the sphincter by buried su-

tures producing thereby a fold or a spur which would act as sphincter. Or I might have practised Schultze's operation (*Wiener medizinische Blätter*, 1888, first operation performed 1878) in which oval pieces of vaginal mucosa are excised and the wound sutured transversely, producing thereby a constriction of the urethra. Winckel's operation (*Deutsche Chirurgie*, vol. 62, 1885), excision of wedge-shaped piece of the wall of the entire urethra with subsequent suture would satisfy the indication of tightening the urethra by constriction. Engström's operation, removal of a wedge from the urethral wall without mucosa of the urethra, would even be preferable to Winckel's, because in Winckel's operation if primary union did not follow a urethro-vaginal fistula would be the consequence, whereas in Engström's operation in the case of primary union not taking place granulation of the wound might produce a satisfactory result. I also remembered a method used by Desnos (*Annales des maladies génito-urinaires*, 1890, vii) and similar to one which Dr. T. J. Watkins had used in a case which he reported to this society last year (*Am. Gyn. & Obst. Journ.*, 1898). In Desnos' operation a median incision is made in the vagina from the meatus externus to a point a little above the vesical orifice of the urethra. The urethra is isolated for two-thirds of its circumference. Two or three mm. below the neck of the bladder after the introduction of a thin elastic catheter, a strong catgut ligature is passed around the urethra and tied firmly. In Dr. Watkins' case silver sutures were used in a similar way. However, both of these cases were failures. Albarran (see below) had used a similar method but in conjunction with other methods and presumably his success was due more to other steps of his operation which belongs to the mixed type, whereas all operations mentioned so far have one and the same principle, namely that of producing continence by constriction of the urethral caliber.

In my case there existed one objection to the use of any operation which would relieve by producing constriction of the urethra, because it was to be expected that on the return of the patient to her husband the urethra would again become dilated. This same objection seemed to hold against Gersuny's operation (*Centralblatt für Chirurgie*, 1889), the excellent results of which would otherwise have recommended it for use. It is needless to give details of Gersuny's well-known operation. Suffice it to say that it produces continence by twisting the urethra, a method so successful that it has been used extensively alone and in combination with other methods (see below Pousson's operation). But this method, if used exclusively, gave no promise of obviating future trouble in our case.

In order to prevent the recurrence of the incontinence after the patient had returned home it seemed advisable to get the urethra out of the way by placing the meatus externus at a point where it would be less exposed. The operations of Schroeder (Moericke, *Zeitschrift für Geburtshülfe*, vol. 5), of Pawlik (*Wiener medizinische Wochenschrift*, 1883) and of Himmelfarb (*Archiv für Gynäkologie*, 1893) have the common principle of advancing the urethra, giving it at the same time a kink around the pubic arch, and pressing the posterior wall of the urethra against the anterior wall. In Schroeder's operation the lateral edges of the meatus externus are sutured to corresponding rounded surfaces higher up towards the clitoris. Pawlik's operation is similar. But these operations afford very small wound surfaces for suturing and the risk of failure is thereby enhanced considerably. Pawlik him-



self has had failures, Schroeder's operation is not much different from his and Himmelfarb's case had to undergo five operations before it was cured.

The principle of these operations, however, seemed useful in our case with special reference to prevention of recurrence and so I decided upon a combination of principles and performed an operation, the mechanics of which united Gersuny's twist with the kink, the constriction and the advancement of the urethra.

I placed a silkworm suture on the lower circumference of the urethra in the median line as a guide for the twist (S), then I made an

incision around the meatus externus (E M. Fig. 1) and continued this into an incision in the median line along the anterior vaginal wall about 5 cm. long. I dissected back the vaginal flaps (a and b. Fig. 1 and 2.) and continued the dissection of the urethra (U. Fig. 2) until I had laid bare the urethra all around to the distance of about four cm. Then I made a transverse incision through the mucosa below the clitoris (C) and about one cm. above the incision around the meatus externus, pushed a knife underneath the mucosa from this transverse incision through the incision around the urethra and raised thereby a transverse bridge of mucosa. I then pushed the urethra up underneath this bridge of tissue, twisted the urethra 180° and sutured the urethra to its new moorings (Fig. 3) with interrupted catgut sutures. The vaginal flaps (a and b) which I had dissected back were then shortened sufficiently to produce by their suture (continuous catgut) an additional constriction of the urethra. The edge of the incision around the urethra was taken up in this suture and united longitudinally (see Fig. 3) giving thereby additional support to the advanced urethra. The silkworm thread which was now at the upper side of the meatus externus was then removed and a thin elastic catheter introduced, which, however, was removed the same day because it annoyed the patient. The result was highly satisfactory. At first I had the patient urinate every hour, then every two hours, and so on. Now she holds her urine six hours by day, sleeps all night, and is perfectly dry. She has not the slightest incontinence whether she is lying down, or sitting, or standing up, or walking, or coughing, or pressing. The patient is out of bed since the third day. The act of urinating is accomplished without difficulty, the patient need not press or wait and the time consumed in urinating is short. In the patient's own words it is all perfectly natural, as if she had never had any trouble.

The literature on this subject contains two reports of operations by French surgeons who have used combined methods, one by Pousson (*Archives de tologie*, 1892) and one by Albarran (see *Pépin. Thèse de Paris*, 1893). Pousson made an incision downward from the clitoris in the median line, joins this incision to one around the meatus, continues it downward and dissects out the urethra to the extent of 1½ cm. The mucosa below the clitoris is dissected back forming two flaps. Now the urethra is pulled forward, twisted 120° and sutured to the incision in the mucosa below the clitoris for two-thirds of its circumference. Below the edges of the flaps are united with one another and with the urethra by deep sutures. He uses the twist as well as the kink, the advancement and the constriction. The only objection is that the

flaps of the mucosa of the vestibulum contain a suture along a line where there is more or less tension and pressure on them. This difficulty is obviated in my operation by using a bridge instead of flaps of tissue. Also by shortening the vaginal flaps I produce a more evenly distributed constriction and I have used more torsion than Pousson did.

Albarran's method uses constriction by infolding of the urethra by sutures, omits the twist and uses the same objectionable flaps as Pousson.

The operation as I have performed it, so far, has been a complete success. It is easily performed and takes only a very short time. It might, if necessary, be performed under local anæsthesia. The hæmorrhage is inconsiderable. There is practically no pain after it.

I expect that the advancement of the external meatus will protect it against further injury. If, however, any further trouble should arise an additional operation may become necessary, but this one on the husband.

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OVARIAN CYST WITH TWISTED PEDICLE: REPORT OF
A CASE.*

BY REUBEN PETERSON, M.D., CHICAGO.

Storer¹ in a recent article, reviewing the statistics of Wells,² Johnson,³ Terrillon,⁴ Thornton,⁵ Howitz,⁶ Thorn,⁷ and Küstner,⁸ estimates that rotation of ovarian tumors occurs in at least twenty-five to thirty-five per cent. of all cases, while torsion of the pedicle is only present in from eight to eleven per cent.

My own experience leads me to the conclusion that these latter percentages are altogether too high for these days of aggressive abdominal surgery. Ovarian growths are discovered and removed nowadays before they reach the size where twisting of the pedicle is most liable to occur. The fact that I have met with but one other case of an ovarian cyst with a twisted pedicle in a fairly extensive experience with ovarian growths has impelled me to report the following case this evening:

Mrs. J. B., age 35, widow, the mother of two children, was admitted to the Post-Graduate Hospital, August 15, 1899. For the past two years her abdomen had been increasing in size, but as she suffered no pain, medical advice had not been sought. Four days before her entrance to the hospital she suddenly was seized with a severe pain in the right lower abdomen. The patient had such high fever and was so prostrated, that both she and her friends felt that an operation was demanded as her only chance for life. At entrance the temperature was 102.6°, and pulse 120. Her countenance was drawn and anxious, and indicated extreme suffering. Examination showed a symmetrical abdominal tumor extending upward to the umbilicus and presenting the classical symptoms of an ovarian cyst. Palpation revealed great tenderness over the right lower abdomen, the center of greatest pain upon pressure being at McBurney's point. Percussion, however, failed to reveal any localized area of flatness. A probable diagnosis of ovarian cyst with twisted pedicle was made, with the possibility of acute appendicitis as a complication.

The abdomen was opened on the following day by a liberal median incision, exposing an ovarian cyst with dark-bluish walls. After carefully packing off the abdominal cavity the cyst was aspirated, about a

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gallon of clear amber-colored fluid being withdrawn. The cyst wall was found to be free from adhesions except on the right side, where it was quite firmly attached to the cæcum and appendix. The tumor was twisted twice on its pedicle. The uterine end of the pedicle was of a natural color, but the distal extremity was of an extremely dark blue, almost black, color. The tube was elongated and distended with blood. The change in color involved the tube and about one-quarter of the cyst wall. The pedicle was untwisted and transfixed below the discolored area by a chain suture and the cyst removed. The left tube and ovary were normal and were left intact. Except for adhesions, the appendix appeared normal, and, as the condition of the patient was not of the best, it was not removed.

Salt solution was used freely subcutaneously after the operation, and for two or three days a pint of salt solution was administered by the rectum at frequent intervals. For five days subsequent to the operation there were symptoms of sepsis, the highest temperature being 103.7°, and the pulse ranging from 100 to 120. On the beginning of the sixth day the temperature and pulse fell, and the patient went on to an uninterrupted convalescence. The wound healed by first intention, and the patient left the hospital well at the end of three weeks.

It was by no means easy to make a differential diagnosis between a right-sided ovarian cyst with twisted pedicle and an ovarian cyst complicated by an acute attack of appendicitis. That mistakes are made by the best surgeons is well illustrated by cases recently reported by X. O. Werder,⁹ where three patients were operated upon for torsion of the pedicle, whose symptoms were produced by suppurative appendicitis.

Sudden pain, chills, rise of temperature and pulse without increase in size of the tumor may be present with both complications. The pain in the case just reported was more continuous than is usually met with in appendicitis, and the amount of shock as indicated by the facial expression was only accompanied by a pulse of 120. In appendicitis such depression would result only from rupture and under these conditions the pulse-rate would be higher.

In the majority of cases of sudden torsion of the pedicle, on account of the impediment to the venous circulation, extravasation takes place, not only into the pedicle and cyst walls, but also into the interior of the cyst. This internal hæmorrhage may be so severe as to cause collapse, or even death. Such cases are reported by Pratuben,¹⁰ Wells,¹¹ and Parry.¹² It will be noted that the fluid in the above case was clear, yet the extravasation into the tube and cyst walls was very marked.

No history of a sudden increase in size of the cyst could be obtained.

This is not uncommon in acute torsion of the pedicle. Anderson¹³ reports a case where a tumor the size of an orange reached the umbilicus in five hours after a torsion of only 180°.

Bland Sutton¹⁴ calls attention to the fact that the dark color of the cyst is not due to gangrene, which is extremely rare in ovarian cysts, but to extravasation of blood.

Infective peritonitis is quite a common result of torsion of the pedicle. In the case under consideration the infection, in all probability, originated from the appendix or cæcum. I believe the subcutaneous injection of salt solution and the administration of large quantities of the same solution by the rectum rendered the elimination of the absorbed poisons possible, and aborted the general peritonitic attack. So much confidence do I place in the eliminating properties of salt solution that I invariably administer it at the first sign of sepsis.

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103 State street.

THE TREATMENT OF CYSTOCELE AND UTERINE PROLAPSE AFTER THE MENOPAUSE.*

By T. J. WATKINS, M.D., CHICAGO.

This paper will consider only those cases of uterine prolapse and cystocele which produce symptoms that indicate operative treatment.

Before considering the operation which the author believes to be the best one for the relief of this condition, he will briefly discuss the operations which are more commonly employed in the treatment of cystocele and uterine prolapse. These operations are:

1. Plastic vaginal operations.
2. Plastic vaginal operations combined with abdominal suspension.
3. Hysterectomy.

1. The vaginal plastic operations consist of anterior or lateral colporrhaphy, and posterior colporrhaphy when the posterior vaginal wall is relaxed.

A. Anterior colporrhaphies.—Most of these operations accomplish only narrowing of the vagina. The tissues which are united consist almost entirely of mucous membrane which readily stretches when the patient resumes the upright position. The anterior vaginal wall is not lengthened and consequently the operation does not correct the prolapse of the uterus. Emmet's anterior colporrhaphy is much more efficient than the other anterior operations as it lengthens the anterior wall by bringing together the tissues lateral to the cervix in front of it and thus forces the cervix backward and upward into its normal loca-

* Read before the Chicago Gynæcological Society, Sept. 15, 1899.

tion. The lengthening of the anterior vaginal wall is also an important factor in correcting the cystocele.

B. The lateral colporrhaphy consists of a bilateral denudation which extends onto the anterior and posterior vaginal walls. The sutures are inserted obliquely so that a given suture passes through the posterior vaginal wall higher up; that is, nearer the cervix, than it does through the anterior vaginal wall. The suture when tied draws the anterior vaginal wall upward and backward and fixes it to firm fascia in the posterior vaginal wall. The special advantages of the lateral operation are that it involves much fascia as well as mucous membrane and the sutures have fixed points of support. The objections to the operation are: (1) That the fixed fascia of the posterior vaginal wall does not extend sufficiently high upwards toward the cervix to permit lengthening of the anterior vaginal wall so as to restore the cervix to its normal location; (2) that in some cases the fascia of the posterior vaginal wall is too much injured to give good fixed points of support; (3) that the operation is difficult to perform. This is a valuable operation, I believe, for the cure of cystocele and prolapse of the urethra but is inadequate for the relief of uterine prolapse.

2. Vaginal plastic operations combined with abdominal suspension. The suspension is usually accomplished by fixation of the uterus to the abdominal wall or by shortening of the round ligaments. The chief objections to these operations are:

- a. The gravity of the operation.
- b. The danger of post-operative complications.
- c. The danger of recurrence of the prolapse.

3. *Hysterectomy*.—Hysterectomy for prolapse and cystocele during the child-bearing period is an unjustifiable operation. In cases after the menopause the propriety of the operation is questionable. Removal of the uterus after the menopause, without resorting to other operations, as is frequently done for prolapse and cystocele does little or no good as the prolapsed atrophic uterus is only a small part of the disease. If the uterus is removed in those cases the prolapsed anterior vaginal wall should be sutured to the stumps of the broad ligaments and posterior colporrhaphy made if indicated.

I do not believe it is advisable to remove the uterus in any case of prolapse unless it is the seat of disease which indicates its extirpation as I believe as good, or better results can be obtained by other means with less danger to life, with less danger of complications and with less suffering after the operation.

Mrs. J. T. A., age 58, was referred to me in January, 1898. She

dated her illness from birth of last child, which occurred 22 years before. Her suffering had increased since the menopause, which occurred four years previously. She suffered much distress from "bearing-down" pains, backache, and pain in the inguinal regions on walking and standing. A protrusion at the vulvar orifice mechanically interfered with walking and sitting. She also suffered from leucorrhœa and vesical irritability. Examination revealed a large cystocele and rectocele. The uterus was atrophied, retroverted, and prolapsed to the second degree.

An operation was made January 29, 1898, as follows: After the usual preparations, the uterus was curetted and separated from the vagina by a circular incision. The bladder was separated from the uterus by blunt dissection and the peritonæal cavity opened in front of the uterus. The anterior wall of the uterus was grasped by bullet forceps and the organ anteverted. About two inches of the upper portion of the anterior vaginal wall was excised. The anterior vaginal wall was now sutured to the upper border of the broad ligaments lateral to the uterus, and to the fundus of the uterus with silkworm-gut sutures. The posterior vaginal wall was incised, longitudinally in the medium line from the cervix downward, about one inch so as to allow the cervix to be displaced upward and backward. The wound in front of the cervix was now closed by silkworm-gut sutures inserted transversely, that is, parallel to the line of incision anterior to the cervix. The operation had at this stage lengthened the anterior vaginal wall, obliterated the cystocele, and forced the cervix upward and backward into its normal location. One silkworm-gut suture secured the cervix in the angle of the incision in the posterior vaginal wall. Emmet's perineorrhaphy was made to correct the prolapse and displacement of the posterior vaginal wall. The sutures were removed at the end of four weeks when the union was found to be perfect. The vagina was about normal length, the uterus anteverted and the vaginal walls free from prolapse.

The result was much better than any I have seen follow other operations for like conditions. The patient suffered no more that is usual after plastic vaginal operation. She has continued to be entirely free from pelvic distress.

This operation is an application of the principles of the operation of vaginal fixation for retroposition of the uterus. The operation differs from the usual vaginal-fixation operation in excision of enough of the anterior vaginal wall to obliterate the cystocele after the sutures are inserted and tied; in suturing the anterior vaginal wall to the broad liga-

ments, and in incising the posterior vaginal wall and suturing so as to hold the cervix in about its normal location.

¹ In cases of complete prolapse of the uterus the anterior vaginal wall can be held in its normal location by means of this operation as the sutures can be passed through the broad ligaments high enough to accomplish the desired result.

I have had an opportunity to do this operation only three times. The histories of the other two cases do not vary enough from the one given to justify me in taking your time to relate them. The results in the three cases were very satisfactory.

The operation promises to give permanent results as the prolapsed tissues are secured to fixed structures. Many of the operations which have formerly been done were designed to hold the prolapsed organs in place without fastening them to any fixed structures. Emmet long ago showed the fallacy of attempting to prevent prolapse of the bladder wall and uterus by narrowing of the vagina as the vagina would dilate when the patient resumed the upright position, and demonstrated that the only hope of a permanent result consisted in lengthening the canal. This operation does lengthen the vaginal canal and will, I believe, make the result permanent on account of the fixed tissues which are involved in the operation.

The operation is not adapted to cases during the child-bearing period on account of the danger of complications to gestation and labor. This operation, however, is adapted to the most difficult cases of uterine prolapse and cystocele as these usually occur after the menopause as the result of senile atrophy.

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EDITORIAL.

ALTRUISM IN THE MEDICAL PROFESSION.

As in the physical world the law of gravitation universally prevails, so does there exist in human nature a force whose tendency is to keep at the dead level of personal surroundings the thoughts and actions of each of us. This dead level is our personal interests as they immediately confront us and is called selfishness or egotism.

As in physics so in ourselves, therefore, special effort is required to overcome this natural tendency, fatal to all progress, by which we become oblivious to the duty and advantage of helping our neighbor. Without this constant effort, mankind would soon relapse into solitary barbarism and it is the conscious necessity of this effort, on the other hand, which has produced the aggregation of men in states and cities, with laws of mutual benefit—a condition of things which we call civilization.

This is altruism as the world understands and practices it and, although it is not the pure principle which religion teaches nor that which we as physicians profess, it has accomplished more practical good, even with its lower motive, than we have done with our professions of doing good for good's sake. It has taught men, in other associations than ours, to act for mutual protection, to obtain laws for the advancement of their mutual business interests, to the end that they might produce to the utmost of their capacity and might fashion to the best of

their knowledge and ability. Thereby other men are benefited as well as themselves. The silk merchant unites with others of his kind and provides that he and they in common shall not merely have the right to live but that the laws to which they submit shall enable them to practice their trade in such manner that its highest development and extension are assured. His province as a trader is clearly defined and he obtains from his fellow-citizens a willing acknowledgement of the rights of his trade. His incessant endeavor is to produce the best silk and every resource is strained to this end. In every respect does he strive to raise and to increase the efficiency of his trade and thus, to the extent of his capacity, does he benefit mankind. So is it with all other trades, all other professions, save ours.

But we alone, who profess a special knowledge for the benefit of the human race and for the amelioration of the physical ills and burdens of mankind, we, to whose care men trust, to ward and ware, the two great facts before whose importance all other facts pale into insignificance—Life and Death—how do we fulfill this trust, how do we exert ourselves for the good of mankind? Can it be said of the medical profession that we are united in a common and exhaustive effort for “the highest and utmost development and extension” of our knowledge and of its application? Do we produce the very best of which we are capable, even with the merchant’s motive of personal advantage? Do we unitedly demand from our fellow-citizens the right, freely accorded to all other lawful associations of men, to pursue our avocation untrammelled to the acme of its usefulness? No. Disunited, singly and individually we dribble out each man his quota of knowledge with its exhortation and warning—unsupported, contradictory and unauthoritative utterances! Practically ignored by the State, laughed and sneered at by our fellow-citizens our condition, in view of our claim to exclusive knowledge for the greatest good to our race, of our actual knowledge and of the possibility of its extension and practical application, is indeed pitiable. But it is our own fault alone. Can we wonder that legislators show scant courtesy and little justice when, with strenuous efforts, a local society unites itself sufficiently to drag with loud wrangling, personal abuse and vilifying contradictions among its members a local petition before the State? Can we wonder that our fellow-citizens sneer at us and openly accuse us of pretentious ignorance, cold-blooded experimentation with human life and mercenary motive in all the good we do—or that they regard our approach with dread when necessity drives individuals to demand our services? Is it not patent to all other men as well as to ourselves that, when we meet formally together, all we

say is so garnished and larded with the personal pronoun that this becomes, as it is intended to be, the central fact in all our scientific writings and utterances? And is not each of us so jealous of his petty individual prestige that any attempt by one or several members at united action on any important subject is enough to turn a medical society into a bear-garden? Can we wonder that we are called cold-blooded and mercenary when the profession will make no attempt to unite and co-operate, even for its own evident advantage, because each man fears that thereby he may lose a little time which might be devoted to his individual and immediate money-getting?

As we have already pointed out, the mission of the medical profession is to ameliorate the physical condition of human life in the aggregate; to discover and put into practice hygiene in its highest development and in its every application. No other class of men are fitted by knowledge or profession to undertake this work. Yet it is evident that we are helpless to perform our duty in this respect unless we obtain by co-operative and concentrated action the recognition and support and endowment of authority by the State. We devote ourselves individually and solely to the treatment of individual diseases, which we would have eliminated long ago had we been clothed with authority and the knowledge which a broader experience in its practice would have given us.

Where are our boasted advances in medicine and surgery, if they save but a few hundred lives when thousands upon thousands are condemned to life-long misery, generation after generation, by ignorance of hygienic needs and the want of an authoritative voice to warn, to forbid and to regulate their physical surroundings? How much credit do we deserve, if a thousand or two cases of appendicitis are cured when no one is free from the danger of typhoid fever in city or in country?

This is our first and only duty *as a profession—to regulate the health and physical wellbeing of communities*. The cure of disease among individuals is the part of physicians individually and in no way interferes with or supersedes our duty as a corporate body. It is not that the profession is incapable or essentially indifferent to its duty; the reason why it so shamefully neglects it is because its members hold their heads so close to the ground, grubbing for immediate sustenance, that it will not look up and recognize its greater, broader and nobler mission.

When the leaven of union and co-operation has begun to work in the profession, then all things will become possible. Is it possible or even probable that the profession alone, among all associations of men, will never recognize practically the necessity of united, corporate action? We do not think it. We cannot but believe that the profession,

roused to recognition of its mission and of its duty by the incessant appeal to individuals of the Medical Press, will at last stand forth the mighty and unquestioned exponent of the greatest of all sciences—the acknowledged and beneficent arbiter of the physical happiness and well-being of civilized man.

Would you know the secret by means of which only the profession may become united? It is that each of us shall so desire this union that we are willing, each man, to forego a personal advantage, to recognize and to allow his neighbor to claim credit for any suggestion or action which tends towards the general good and the possibility of union. For this is the rock upon which every effort to unite has split, since each man has always turned aside to climb upon it that he might thereby obtain a moment's advantage over his fellows.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, June 16, 1899.

*(Continued.)**Addresses in Commemoration of the Death of Dr. James H. Etheridge.*

Dr. NICHOLAS SENN: I give official notice of the death of Dr. James H. Etheridge, one of the founders of this Society. Whenever death invades the front ranks of such a small, select society, the loss is always keenly felt. We all knew Dr. Etheridge as a man and as a surgeon. He needs no eulogy here. He had a magnificent physique and the keenest of intellects, both of which contributed so much in achieving the success that he did. He was respected in this community as a physician and as a surgeon, and certainly among his colleagues his honorable conduct was always noteworthy. As a teacher, he was beloved and successful. We shall miss him in the future. We shall miss his genial smile, the warm grasp of his hand, and his wise counsel. I do not intend to give you a description of his life. This will be left to our colleague who has been intimately associated with him for a long time, and he will in due time do justice to his record. I ask you, gentlemen, to rise in memory of the dead.

Dr. FERDINAND HENROTIN: I desire to say a word of tribute to my life-long friend, Dr. Etheridge. After thirty-one years of the most intimate relations, spent in an active and busy life, in meeting him frequently, I can say that words are not at my command to express the deep regret and the feeling of affection that I felt for him all through his life, and the immense and irreparable loss that I feel in his death. It is very probable that few have known Dr. Etheridge very thoroughly. He being so constantly busy, it was impossible to be sufficiently well acquainted with him to know his peculiarities of disposition. He was certainly one of our great fellows in the profession, both in heart and head. Of his ability as a professional man, you are well aware; of his standing in the professional ranks you know. But of the peculiar magnificent characteristics with which he was endowed, I say I cannot find words to express them. His one great character mark was

loyalty to every principle which he advocated; loyalty to every friend that he avowed; loyalty as a husband and father of a family; loyalty to his religious feelings; loyalty as a citizen to his country; loyalty to his profession, which he loved so well, and loyalty especially to his friends. The greatness of his heart can hardly be expressed. He was as kind as any child could be. Every time a friend's name was mentioned, it was always with some expression of regard, some expression of feeling. With almost daily contact with him, and so closely allied with him for many years, as I have been, I have never heard him express himself in regard to a friend except in the same loyal manner, feeling for him in his sorrows and afflictions in every way. He never knew what the word rancor meant. Occupying the position that he did, it was only rational that he might be criticised, as all great men are who occupy such positions. But I can say that no man ever assailed him, or no man ever said one word about him, that is, if he held out his hand or showed the least spirit of reconciliation, everything was forgotten. He has been with us a great, good man, and he leaves behind him a memory of inexpressible kindness and affection that can hardly be expressed by me.

The *Secretary* read the following by Dr. HENRY B. STEHMAN on Dr. Etheridge:

The relations which existed between Dr. Etheridge and myself for the past decade or more is sufficient, in my judgment, to entitle me to the privilege of a few observations regarding his character. I ask myself, What was there about Dr. Etheridge that distinguished him among his fellows? In the first place, physically, he was above the average, and his appearance was such as to attract attention. Dr. Etheridge was a man among his fellows; his manhood was of a type, only too rarely found at the present time. He was a gentleman of the old school; his bearing was elegant; his character chaste, and his language pure. Of his professional attainments, I need not speak. The honors conferred upon him at home and abroad sufficiently attest them. These are well known to all of us; but of his character woven into the profession and practice of medicine, I wish to say a few words: We are aware that he commanded the highest esteem of his professional brethren, and while it seems quite difficult for a man who possesses ability beyond the average to always retain the good will of his peers, nevertheless, I think in the case of Dr. Etheridge, as in many similar instances, those petty jealousies which have arisen among the leading men of the profession have disappeared under the light and knowledge of a more intimate acquaintance with him. Men learned to esteem

him not only as a great physician, but as a noble man, and when we try to measure a man's professional ability we must do so with weights and measures which were in use when the foundation of his education was laid. We are so apt to estimate men by our standards—if, for example, in some particular we may be able to teach them some things, we so readily jump at the conclusion that we therefore could teach them many things. How absurd!

Dr. Etheridge honored his profession, and in doing so, he stood up for its professional honor. He was first in maintaining the dignity of the profession and in giving his best support to his professional brethren. When they needed his help, professional or otherwise, they got it—not half-hearted, not indifferent—but a life that made the beneficiary feel that he was supported by a veritable power; and, what is more, he knew how to help.

A few years ago the patient of a physician whom we all esteemed resisted the payment of a bill. The case was taken to court; Dr. Etheridge was a witness. The defendant's counsel said to the doctor: "Did you ever perform such an operation?" Ans.—"Yes." "How often have you performed it?" "About three times." "What compensation did you receive?" "Nothing." The lawyer, being somewhat surprised, asked again, "How much?" Dr. Etheridge—"Nothing." The judge before whom the case was tried told me some time later that it was the cleverest bit of testimony that he had ever heard. The jury seemed to be at once impressed with one thing, viz., that the poor man had at his command professional services that were equal to those rendered the rich, and that it was only just that the latter should pay a fat round fee to partially compensate the surgeon for gratuitous services rendered the deserving poor.

How many men have ever heard Dr. Etheridge speak in any way contemptuously of other physicians, discounting their ability, making doubtful inuendoes or disparaging their character? I never have. Furthermore, when was Dr. Etheridge ever guilty, during the period of his college career, of repeating stories of doubtful *entendre* or of telling anecdotes that could not be told anywhere? Not he. A slip of the tongue or an unfortunate expression which with the evil-minded persons would raise a titter, received from him a most stinging rebuke. No; he not only used fine English, but he also dealt in clean language. But Dr. Etheridge retained a firm hold on his patients personally. It was not that they were hypnotized by the glamour of an overwhelming self-conceit which so frequently manifests itself in men who have no depth of character or breadth of learning, nor was it that

they fully appreciated his skill, but, rather, of an implicit faith in his integrity and assurance of sympathy. What a sense of comfort for a patient to know that confidences are sacred, and what stronger bond can bind a patient to you or to me than the assurance that their follies or mistakes, whether willingly confided or uncovered in the course of a physical examination, are heard or seen by one upon whose lips is placed an unbroken seal? To all comers who sought to know other persons's secrets, Dr. Etheridge was as mute as a sphinx; there was no one among his most intimates who could wring a patient's secret from him, and his skill at meeting the inquiries both of evil and also well-disposed questioners was not any more remarkable than it was effective.

His patients knew that their suffering caused him anguish, and that he fully sympathized with them; nor was this tenderness in any wise stimulated by the size of the fee. It was the pity of a great heart. His patients loved him, and they did so because his heart went out to them; and, moreover, this sympathy found no expression in words; rarely ever was his language or his actions in the least bit suggestive of what one was certain he felt, but still the intuition of women read subtler signs than words or acts. I have come to believe that the man who prosecutes his medical researches primarily that he may know the truth for its own sake, is the individual who not only will experience the greatest joy in manifesting the same, but is the man who is nearest to the heart of his patients. To the world in general their hearts may appear as adamant, but to the suffering they evince touching tenderness.

But before closing, I wish only to remind his friends of one more characteristic, viz., that in dispute or in debate, he was above personalities, and stood for principles. What was right was right, whether he was in the wrong or in the right. When in error, he acknowledged it, never stooping to doubtful measures in order to avoid the admission that he might be mistaken.

In extolling the virtues of our friend and fellow member of the profession, we are not forgetful of the fact that he was human; nevertheless, these evidences all sink into the background while contemplating his many excellencies.

Dr. DANIEL T. NELSON: Only in the past few years of his life was I thrown into intimate relation with Dr. Etheridge, having served most of my time as a practitioner in connection with another school and where I was not thrown into intimate relation with him. His vivacity, his skill in work, his apparent ability for unlimited work always struck me as characteristic. He was always genial; he was always open-hearted. He was exceedingly rapid as an operator, and was

likewise very skillful. Some of us may do good work if we have time enough, but he did good work rapidly. And yet, it seems to me, the greatest lesson of his life to us all is—and perhaps I appreciate it more than most of you do, for I have been through it to a certain extent—that there is a limit for all of us in our work. We cannot go beyond it before we draw heavily upon our bank account of needed strength that we lose by it. Not only we lose by it, but if we are worth anything to the profession and to our patients, they lose by it. It seems to me that is one of the lessons that should be left to us, and I believe if he were able to talk to us from his standpoint to-day he would say, "Be careful."

Dr. E. J. DOERING: I have not the faculty of making extemporaneous remarks on an occasion like this. I heartily endorse all that has been said about Dr. Etheridge, and in his death I feel that I have lost one of the warmest and best friends I ever had in the profession.

Dr. E. C. DUDLEY: I did not expect to be called upon to make any remarks on Dr. Etheridge, but I am glad to do so. My acquaintance with him was not as intimate as that of either Dr. Henrotin or Dr. Doering. It did not cover such a long period of time. However, I knew him pretty well. Of his most excellent qualities I would like to relate one or two instances which occurred between us within the past year. Going home one night from a meeting of this Society I rode with him in his carriage to the South Side. On our way home he said to me: "Dudley, we are engaged in the same line of work, in the same city, and we never have known one another very well, and I really think that if we cultivated one another's acquaintance more we would become very warm personal friends," and I said to him that I had often thought of that. But to make a long story short, a week or two later I called at his house at 8:00 o'clock in the evening and found him in bed, not having been well during the day, reading the memoirs of Tennyson, as well as the life of Bismarck. He laid aside the book, and I stayed there and we chatted for two or three hours. I started to go, and he said, "We want to make up for lost time." And so it was between 10:00 and 11:00 o'clock before I was able to go. When I was about to leave, Dr. Etheridge put out his hand and said, "Old man, I can't tell you how highly I appreciate this call; it has done me a great deal of good. The first time I go to your house I shall not leave at half past 11:00, but shall make it a point to remain until 1:00. I want to make arrangements by which we shall see a good deal of each other and form a close personal friendship." It goes without saying that that little experience with Dr. Etheridge, gathered entirely by

those two interviews, made a very profound impression upon me of the real manly qualities of the man. While I had a good impression of him before, it was enormously strengthened, and as I look upon my relations with my professional brethren, I think of nothing which gives me as much pleasure and as much satisfaction as that did, and I expect to look upon it in that frame of mind. I can add nothing more, Mr. President, to the eulogies which have been pronounced upon Dr. Etheridge. We shall miss him for a long time, and shall not soon see his like again.

Dr. O. B. WILL of Peoria: In coming here this evening I had no expectation of making any remarks relative to the memory of Dr. Etheridge. But as a classmate, as a fellow student, as a fellow worker, I knew him better in the early part of his life than during the later years of his work. He was very helpful to me during that period, and although our work in later years was in different localities, I frequently met him; I frequently came in contact with him, and we were the warmest of friends from the day we met in the classroom of Rush Medical College up to the day of his death. Those who have spoken knew him better in his later professional relations than myself, but those days of long ago of which I speak endeared him to my memory, and made us everlasting friends. I fully endorse all that has been said commendatory of his memory here to-night.

Official Transactions.

C. S. BACON, *Editor of Society.*

Stated Meeting, September 15, 1899.

The President, NICHOLAS SENN, M.D., in the Chair.

Ovarian Cyst with Twisted Pedicle: Report of a Case.

By REUBEN PETERSON, M.D.

(See page 417.)

DISCUSSION.

The PRESIDENT: I would like to ask Dr. Peterson as to the cause of this torsion. If I remember rightly, he mentioned that the cyst was firmly adherent to part of the abdominal wall.

Dr. PETERSON: No, sir. The cyst was adherent to the appendix and the cæcum, and not to the abdominal wall.

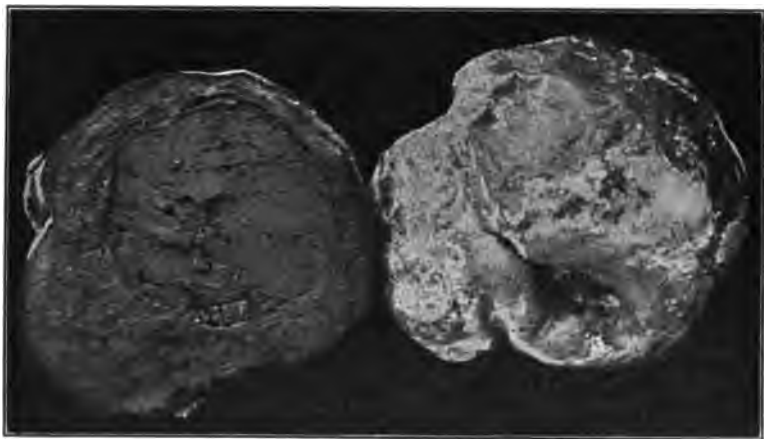
Dr. M. L. HARRIS: I have two cases to report and a couple of specimens to exhibit in connection with the paper of Dr. Peterson.

Case I.—Mrs. P., aged 63, German, mother of fourteen children. I received a letter from a physician in the country one day describing the condition of a patient whom he had, and asking for advice. From his description I made a diagnosis of probable ovarian cyst with twisted pedicle, and advised an immediate operation. The next morning the doctor and patient appeared at the hospital. She was very large, weighing probably 250 pounds. She had no knowledge of the tumor having existed until about a week before, when she was taken with acute pain in the abdomen, vomiting, fever, and constipated bowels. The tumor was discovered by her physician, at the time he wrote me concerning it.

An examination of the patient confirmed the probable diagnosis of ovarian tumor with twisted pedicle, and an operation was advised at once. The patient's condition was very bad when she arrived at the hospital; not only was her weight excessive, but she had an immense goitre which had existed for twenty-five years, and had caused considerable trouble in respiration. During the journey she had several attacks of heart failure, so that they thought she would die before she reached the hospital. An operation was made the next day, and this tumor which I show you was removed. It was found to be an ovarian tumor with twisted pedicle. It is a cyst-adenoma in which hæmorrhage had taken place, the cavity being filled with a large blood-clot (Fig. ?). The tumor was twisted 180° ; it was very black, with thickened and cedematous walls. The peritonæum was very much congested and ecchymotic throughout, and bloody fluid filled the peritonæal cavity. There were no adhesions about the tumor, it being perfectly free in the cavity. The patient died the next day. Of course, she was in an extremely bad condition when we operated; the pulse was weak, and we had great difficulty with the anæsthesia from the large goitre.

Case II.—Mrs. B., aged 29, the mother of three children, the last being born five months ago. I was sent for one night to operate for acute appendicitis. The history obtained was something like this: In December, 1898, the patient had an acute pain starting in the lumbar region, extending around the right side to about the mid line, which continued for three or four days, and during this time she was sick enough to be confined to bed. On March 15, after having attended a dance, she had a recurrence of the pain in the lumbar region, extend-

ing around the right side, and then diffused itself over the abdomen. There was no history of tumor. The patient had no knowledge of the tumor, and at her confinement five months before no tumor was recognized by the attending physician, who was an experienced obstetrician. This pain was accompanied by fever, and great distention of the abdomen. The obstinate bowels had been relieved by salines and enemas. On March 25 I saw her, that is, ten days after she was taken sick. At the examination I found the abdomen considerably distended, but extending from just above the right anterior superior spine of the ilium obliquely upwards and outwards toward the left hypochondriac region there was a distinct line of demarkation, with fluctuation below,



Cystadenoma of the right ovary, measuring 24 cms. in width, filled with a blood-clot. (Case of Mrs. P.)

and tympanic resonance above. The sac was very loose, there being no tension in it at all, so much so that with a change in the position of the patient one was first under the impression that the fluid changed, but by a careful examination the above mentioned line was distinctly mapped out. The line of demarkation followed the transverse colon.

The woman was removed to the hospital and operated at once. At the operation we found this large cyst-adenoma of the right ovary, with a twisted pedicle of 180° degrees. The cyst was dark from hæmorrhages throughout the cyst wall. There were universal adhesions. The line mapped out was the transverse colon, which was adherent. The cyst had raised upwards the small intestine, so that it

lav against the mesentery proper, and was adherent to the pelvis and to the anterior abdominal wall, particularly anterior to the bladder, so that in separating it it left an immense oozing surface, which continued to ooze, and in order to stop it we had to resort to packing. The packing was removed at the end of thirty-six hours, and the patient recovered without any bad symptoms.

The case was very interesting to me at the time, from the fact that we had such a diminution in the tension of the cyst. As is well known, the tension usually increases in cysts with twisted or torsion of the pedicle.

Incontinence of Urine: Report of a Peculiar Case.

BY EMIL RIES, M.D.

(See page 411.)

DISCUSSION.

Dr. FRANKENTHAL: What was the direction of the stream of urine?

Dr. RIES: I have asked the patient about that. I thought that in consequence of the advancement of the urethra so much there would be danger that the patient would wet herself in urinating, but she informs me that she does not wet herself when she urinates, so apparently the stream of urine is directed forward, not upward. I should like to ask Dr. Watkins what has become of his case.

Dr. T. J. WATKINS: The last time I saw my case of incontinence of urine the patient was no better. The silver wires finally cut through, the mucous membrane became exposed in the urethral canal, and I had to remove them. I tried to get the patient to undergo another operation, although she had had six or seven before, but she decided not to have another done.

I wish to congratulate Dr. Ries on the very good result in his case, as I believe that this class of cases are among the most difficult to relieve that we have, and I should think that the compression of the urethra in his operation may prove to be beneficial.

The Treatment of Prolapse and Cystocele after the Menopause.

BY T. J. WATKINS, M.D.

(See page 420.)

DISCUSSION.

Dr. CHARLES S. BACON: I would like to ask Dr. Watkins why in his case he considered it an advantage to attach the anterior vaginal wall to the broad ligaments instead of to the uterus itself.

Dr. WATKINS: It is sufficient to attach the anterior vaginal wall to the uterus if the uterus is not much prolapsed. If the organ is much prolapsed it then becomes necessary to attach to structures higher in the pelvis in order to get perfect restoration of location. The broad ligaments are the only structures that can be utilized under these circumstances.

Official Transactions.

C. S. BACON,
Editor of the Society

TRANSACTIONS OF THE PERIODICAL INTERNATIONAL
CONGRESS OF GYNÆCOLOGY AND OBSTETRICS.

Third Session, Amsterdam—Aug. 8-12, 1899.

(From Official Reports.)

*(Continued.)*ON THE RELATIVE VALUE OF ANTISEPSIS AND IM-
PROVED TECHNIQUE FOR THE ACTUAL RESULTS OF
OPERATIVE GYNÆCOLOGY.

EXTRACT FROM THE REPORT BY L. GUSTAVE RICHELOT, PARIS.

For the answer to this question, it will be necessary to first examine operative results, and we have, therefore, to discuss. 1°. the evolution of antiseptics, the part it has to play, and its limitations. 2°. the important modifications undergone by the technique in use of late years, and to point out how necessary it is to be a thorough surgeon, in order to practise surgery with success.

Operative Results.

The Development of Antisepsis. With Lister's method began the revolution, which created the possibility for future perfection in technique, but it was not flawless, and is not so yet. In the beginning, all danger was supposed to come from the air and from the invasion of wounds by atmospheric germs. Carbolic acid then reigned supreme, and this first period has been termed "empirical"—not entirely without reason. Afterwards came a time of more exact researches into the various causes of infection and the preventive measures to be adopted. Morphological investigation and experiments *in vitro*, became the law. This was the era of scientific credulity, when nothing more was aimed at, beyond making use of the best laboratory-antiseptic for sick-room purposes.

It was not long, however, before the discovery was made, that the very best antiseptic *in vitro*, does not retain its value for clinical purposes, and that laboratory prognoses were not always to be relied upon.

It was found that the use of antiseptics, was not only inefficient but at times dangerous. Hence, it gradually became more or less discredited, whilst sterilization by heat has been daily gaining favor. This brings us to the present time.

The utilization of heat for the destruction of germs, and for sterilizing instruments and dressings, originated with Pasteur and has well nigh attained perfection; its assistance in the struggle against infection is not to be denied.

Should it be considered a *new* method? It is asserted to be so, by a class of surgeons who own that antiseptics has been exchanged for asepsis. It strikes me that here must have been confusion of ideas. Asepsis is the aim, antiseptics the way. Heat has been substituted as much as possible, for powders and solutions, but heat, in itself, is only the most powerful antiseptic. I will, therefore, continue speaking of the "antiseptic" method. Moreover, heat is not adaptable to all purposes, and we cannot do without other antiseptics, as well.

It cannot be asserted that the utilization of heat has simplified matters. On the contrary, sterilization can only be obtained by a very complicated and expensive apparatus, demanding the most careful manipulation.

It is a great mistake to suppose, as some do, that so-called asepsis, is nothing more nor less, than ordinary cleanliness; we can safely aver that the continual effort to attain asepsis by every means, has brought forth the most admirable results.

The boundary line of antiseptics must now be traced. We are enabled, to a certain extent, to prevent ourselves from carrying infection to our patients, but as personal asepsis does not destroy the existence of bacteria we are fighting with unequal weapons against pre-existent infection. For instance, if in course of abdominal salpingotomy the purulent sac should burst, "contaminating the peritonæum by its contents," if the matter be particularly infectious, the patient will die, whatever may be done to avoid fatal results. It can, however, also happen that when in similar cases, the focus be carefully cleansed and drained with gauze, the patient recovers, after a few bad days. How are we to explain this? It may be that the pus was less virulent; or that the organism defended itself, no share in the recovery being due to ourselves.

This notion concerning the powers of self-defence in the organism has rectified absolutism of the earlier ideas on the subject of micro-organisms (the specific gravity and degrees of virulency in microbes). Bacteriologists have acknowledged its importance, and shown its

mechanism, by demonstrating phagocytosis. The living organism is able to defend itself, it beats off attack, when not in a debilitated condition, and armed with all its resisting power. If this is not the case, hope is lost. We should not expect too much from "*Natura medicatrix*;" and when in an enfeebled condition should give it the support that is wanted. Surgical art is now called upon and the importance of technique stands revealed. Antisepsis is the same for every one and demands only passive obedience to certain rules. On the contrary, technics vary, and are subject to personal aptitude.

The value of antisepsis is, within narrow limits, absolute; the value of the technics is relative and illimited, it depends from the operating hand and from the directing head.

Evolution of Technique. The great technical improvements have been rendered possible by the use of anæsthetics, exact hæmostasis and antisepsis.

Instruments. Amongst the numerous inventions under this heading, that our time has produced, the greater quantity can safely be consigned to oblivion. We acknowledge the value of artery clamps and are much indebted to the Trendelenburg position, but as for the rest we do not place too much reliance on instrumentary innovations. The best results are obtained by the surgeon who knows how to use his hands and his common sense.

Surgical ability in the widest sense of the term, is comprised in the three chief qualifications: dexterity, ingenuity, and judgment.

Dexterity varies in its nature—some possess the gift by birth, others never acquire it, and most manage to do so, and to develop it by practice. Any one can observe this by himself. An able surgeon operates quickly, so as to minimize the dangers of a long operation, *i. e.*, greater chances of infection, hæmorrhage, shock, etc., although quickness of execution should never be allowed to encroach on careful operating.

The ingenuity of gynæcologists has opened several entrances to the pelvic organs, and taught us various methods of proceeding although it must always be remembered that for methods, as for instruments, excess does not mean riches.

The history of operative treatment of pelvic diseases, fibroids and uterine cancer, etc., shows how important is the choice of the *Operative Way*. To make sure of selecting well, we must have broad views on the subject. "Not one of us has the right to be imperfectly educated."

Methods continue to become more and more simplified, and in that way lies progress. The successive extraperitonæal and intraperitonæal treatment of the stump, and total extirpations in the abdominal

operations for fibroid, furnish the example. Another is found in the application of "pincés à demeure" in vaginal hysterectomy.

Whatever way may be followed, whichever may be the method chosen, the *details of execution* will always decide the point. The true surgeon shows himself, who seems to be operating easily, and manages to produce the impression that any one else can do the same.

Therapeutic Results.

Obviously the best methods yield the most favorable results, but it is not to demonstrate this I am now addressing you, but to speak of the relative value of antiseptics and technique—assigning to each its share in the final results. I will not select my examples amongst dangerous operations and merely remark that, whilst in these many operators ascribe their good results to antiseptics alone, it is the contrary for minor operations where the importance of *method* is greatly exaggerated. The question concerning abdominal suture and colporrhaphy points to the conclusion that it matters less what is done, than how

To conclude, I wish to remark that the union of antiseptics with improved technique paves the way for conservative gynæcology, and that in this direction lies the progressive improvement we hope to attain.

RELATIVE WORTH OF ANTISEPTICS AND TECHNICAL IMPROVEMENTS FOR THE ACTUAL RESULTS OF OPERATIVE GYNÆCOLOGY.

EXTRACT FROM THE REPORT BY E. BUMM, BASEL.

The absolute reliance on the protective power of *antiseptics* has been a good deal diminished by exact investigations, as it has been proved by a whole series of experiments and observations that elimination of all micro-organisms during the operation, has not yet been attained.

We can sterilize the instruments and dressings, but no method has been discovered, at least up till now, that gives us with certainty, the same result as the skin of the hands and the part to be operated on.

A year's bacteriological research made during a great number of operations from beginning to end, the skin of the hands as well as the

operation field, the wound, the instruments, the dressing and ligature material, have given me the following results:

1. There is no way to remove with certitude all micro-organisms from the hands. The successive use of soap and hot water, of alcohol, and of a solution of lysol or sublimate, for 10 minutes each, are not sufficient to sterilize the skin with certainty.

For these experiments rigid precautions, as prescribed in Högler's method, are necessary to obtain satisfactory results. Above all it is not sufficient to examine only a small part of the hands, to remove the adhering remainder of the sublimate, taking into account the shrivelling of the skin by the alcohol.

2. The same conclusion is to be drawn with regard to the skin of the rest of the body and especially for the external genitals, the perinæum, the vagina, etc.

3. During the course of the operation we find on the instruments and ligatures and in the wound principally the micro-organisms originating the deeper parts of the epidermis and from the glandular ducts. In 50 great operations, under exact control, none were found entirely free from the presence of micro-organisms.

4. With the "aseptic" method, even when the operation is made in the best conditions and with the greatest precautions, the number of micro-organisms is far higher than that which is found in using the antiseptic method. At the end of the operation the so-called sterile salt solution contains regularly micro-organisms and sometimes in great number.

5. The micro-organisms of the atmospheric dust are but of small importance in the infection of operating wounds.

6. Difficult as it is to operate without giving access to the micro-organisms, it is still more so to keep them away from the wound and its surroundings for a longer amount of time.

It is, therefore, illusory to think that either asepsis or antisepsis can bring about a sterile condition of the wounds. According to circumstances there will be in every wound more or less bacteria.

In spite of this proved presence of micro-organisms most wounds heal without suppuration or fever. This result is due to the bactericidal power of the organism.

But this bactericidal power of the organism can be insufficient, and this occurs *when the wound is brought into contact with virulent micro-organisms or when it presents bad conditions for the full development of the bactericidal qualities of the tissues and humors.*

Formerly the access of virulent micro-organisms to the wounds was

only a question of chance. Actually antisepsis gives us the means to avoid this contact. But, as virulent micro-organisms are generally found in secretions of wounds and in the humors of the infected body, and as, on the other side, a true disinfection of the hand, impregnated by these infective secretions, is impossible, the dominating element of every asepsis or antisepsis should be the avoidance of the contact with septic matter, abstinence when the contact has taken place, and isolation of septic patients.

The second possibility of insufficiency of the bactericidal power of the organism brings us to a point, where the territory of technique covers that of antisepsis. *Technique has to remedy the insufficiency of our antiseptic and aseptic means, it has to arrange the conditions of the wound in such a way that the organism be able to win the struggle against the never entirely missing bacteria.*

In this view it can be said that purely technical means have a great influence on the aseptic healing of wounds.

I should like to give some examples to show this more clearly.

A short and well-conducted operation exposes the tissues only for a short time to the influence of exterior surroundings and brings manipulations to a minimum; in this way it diminishes the chances of accidental infection. The number of micro-organisms entering the wound will be a good deal less than in operation of long duration, in which the tissues are lacerated by repeated manipulations.

In addition to this a short operation does not so much tax the resisting power of the wounded tissues as well as of the entire organism. To expose the peritonæal cavity during a long time has a well-known bad influence on the heart, the intestines and the serosa. Asepsis has delivered us of the dangerous application of too much concentrated disinfectants.

The importance of *hæmostasis* for the aseptic healing of wounds is universally recognized. The drier the wound, the better are the chances for primary healing. On the other hand the blood, as soon as it has left the vessels loses its bactericidal properties and becomes an excellent medium of culture for the micro-organisms. This being especially the case for the peritonæal cavity, for abdominal operations exact hæmostasis is at least as important as exact asepsis.

Next in importance comes the choice of the *operative way*. Neither the operation per vaginam or per laparotomiam should be condemned by principle. In cases when per vaginam the part to be operated can be better exposed to view, so as to facilitate exact hæmostasis and

avoidable injuries of the surroundings, presenting as it does the least danger, it is, therefore, the best.

But should it appear that the employment of this method prevents obtaining a good view, it would be better to overlook the difficulties belonging to asepsis and follow the directions of the technique demanded by laparotomy.

A last point, where antisepsis and technique meet is *drainage*, and especially drainage of the peritonæal cavity. It is an established fact that drainage, even on the greatest scale, has no effect whatever on diffuse septic peritonitis. But the case is quite different when we have local troubles to deal with, as circumscribed abscess, extensive lacerations of the serosa or contact of the serosa with infectious matter. In these conditions we ought not to expect more of the peritonæum than from any other wound and I then apply drainage by gauze tampons, from which mode of treatment, I have never experienced other than favorable results and would prefer applying it once too often than omitting it.

From all this the conclusion ought to be that to obtain an entirely satisfactory result, antisepsis and improved technics have to go hand in hand. The one without the other is not sufficient. The history of intraperitonæal treatment of the stump in myomotomia furnishes a good example of the importance of technique in relation to antisepsis.

Antisepsis is easily learned and executed. But technicalities are more difficult to learn; they represent an art, that demands above all things a born aptitude. It is high time for instruction in surgical technique, of late much neglected for antisepsis, to be reinstated in its place of honor.

INFLUENCE OF POSITION ON THE FORM AND DIMENSIONS OF THE PELVIS.

EXTRACT FROM THE REPORT BY PROFESSOR E. PINZANI, PISA.

WALCHER'S paper, published in 1889, on the variability of the conjugata vera, being of practical interest, gave a new direction to previous researches on the mobility of the pelvic articulations. I feel obliged to state here, that according to some authors, the merit of having made practical use of the current ideas concerning the mobility of the pelvic articulations is not due to Walcher, the position he describes having been

recommended in difficult labors, by Scipione Mercurio (1595) according to some, by Sebastian Melli (1721) according to others. Allowing the question to pass whether Melli might possibly have copied the design of Mercurio, I wish to observe that neither the one nor the other can have had in view enlargement of the pelvic dimensions, as in their day the mechanism of the sacro-iliac articulations was unknown. Moreover, it ought to be said that though the positions described by Mercurio and Melli have some analogy with Walcher's, there is nevertheless a fundamental difference, as in the former the lower extremities of the woman are always supported, whilst in the latter they are hanging, and by their weight draw the anterior pelvic ring downward and forward. I have examined 62 women during the puerperal state, successively in Melli's and in Walcher's position. In 17 cases exact mensuration of the diagonal conjugata gave no difference, in the other 45 cases there was a difference from 1 to 8 millimeters in favor of Walcher's position. Researches on 5 feminine cadavers gave the same result for the conjugata vera. Therefore, I think, and Pestalozza is of my opinion, that the position with hanging thighs, ought to bear Walcher's name.

Changes in the pelvic dimensions—Antero-posterior dimensions. When a woman is placed on a table, with the head and shoulders slightly elevated and the buttocks somewhat projecting beyond the edge, a cushion being placed under the sacrum, the thumbs being placed on the superior iliac spines, whilst an assistant places the lower extremities first in the lithotomy and then in the horizontal position, finally abandoning them to their weight, the following is observed.

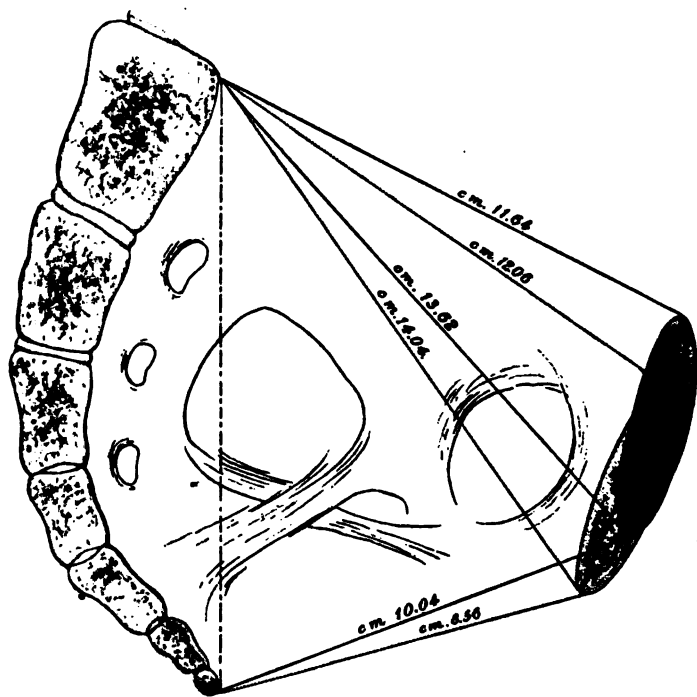
The iliac spines describe part of a circle in a forward and downward direction, the lumbar lordosis increasing at the same time. Moreover, when the lower extremities being in complete extension and allowed to hang downwards, the iliac spinal action continues without the lumbar lordosis being further increased. There is first an increase of pelvic inclination, limited by the tension of the ligamentum longitudinale anterius and the intervertebral joints. By this tension the sacrum is fixed. The anterior pelvic arch being drawn further downward, the effect will not be perceived for the entire pelvis, but only for the iliac bones, which change place in the sacrum. The transverse axis for the movement of the iliac bones lies behind the second sacral vertebra. This axis being situated under the promontory, the symphysis must be removed from the promontory by the rotation, whilst it approaches the point of the sacrum; the sagittal diameter of the brim being consequently increased and that of the outlet diminished. The action of the iliac bones is limited partially by the sacro-iliac articulations, partly by the posterior

ligament, and somewhat by the muscles of the abdominal wall and by the psoas.

I need not say that pregnancy will be, generally, favorable to this dislocation of the iliac bones, but I ought to add that individual conditions may diminish, even in pregnant women, this mobility.

At the present moment there is no doubt that the *conjugata vera* increases progressively, when the woman is brought successively in the lithotomy position, the obstetrical position and Walcher's position.

FIG. 1.



Difference of opinion exists only as to the degree of the augmentation. According to the researches of Walcher, Dührssen, Fothergill, and Küster the increase of the conjugata varies from 8 to 15 millimeters. Of those who object to those elevated ciphers I quote Varnier, who says that there ought not to be made a comparison between the dimension found in the lithotomy position, never used in obstetrics, and that of Walcher, but between the measures found in the latter and in the obstetrical position. In this way an increase of 2 or 3 millimeters ad

maximum can be obtained, according to his researches. Later experiments of Fehling contradict partially Varnier's pessimism. The results of cadaver experiments by Walcher, Klein, Varnier, Pinard, and Küttner being incongruent, and on the other hand the clinical observations of Kalt, Wehle, and others showing a considerable increase, I resolved to make some researches for myself.

In 102 women, nearly all in the second week after confinement and the others in an advanced state of pregnancy, I have measured with the finger with the utmost exactness, the diagonal conjugata in the lithotomy position, in the obstetrical position, and in Walcher's position. By the change of the first position into the third I have found an increase in the average of 7.5 millimeters maximum 17, minimum 22 mm. Between the first and the second position the difference was on the average 1.9, maximum 5, minimum 0 mm. Between the second and the third position (101 cases) the average of the increase was 6.1, maximum 12, minimum 2 mm.

The mensuration in the five female bodies gave smaller differences.

Is it true that the increase of the conjugata vera corresponds exactly to that of the diagonal conjugata? According to Klein the *c. vera* is less, according to Küttner more increased than the diagonal conjugata. In the five bodies I examined the difference between conjugata vera and *c. diagonalis* was the same in all three positions.

I do not exactly know why in the corpse the effect of the change of position is less than in the living.

My researches confirm the results of Klein, that in contracted pelvis the difference between the length of the diagonal conjugata in the obstetrical and in Walcher's position is on the average 8.7 mm., *i. e.*, superior to the general average difference (6.1 mm.).

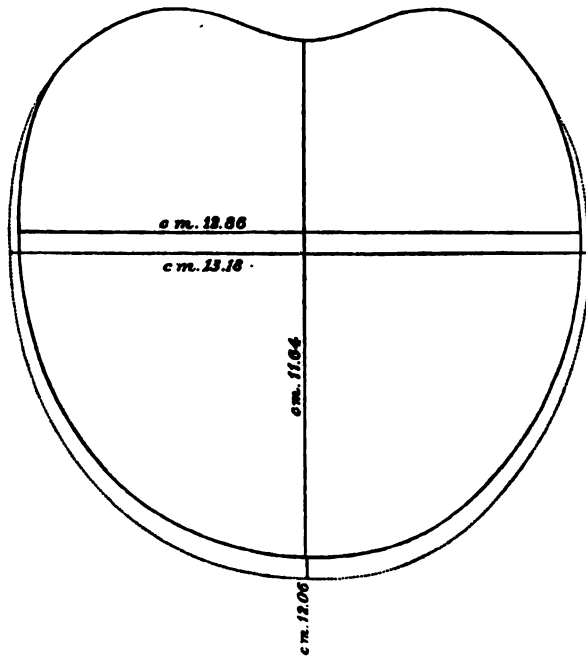
Moreover, I found a great variety, from one case to the other, in the degree of the increase.

The *coccy-pubic diameter* will, as I have mentioned, be shortened in a higher degree than the conjugata increases. I do not know whether exact mensurations of this diameter have been made, except those of Küttner and those I have communicated at the 5th congress of the Italian Obstetrical and Gynecological Society. I have been able to continue these researches and in the 5 corpses I examined I saw by changing the lithotomy into the obstetrical position, an average diminution of the coccy-pubic diameter of 5.6 mm., and 9.2 mm., by changing the latter position for that of Walcher. The entire difference between the two extreme positions was thus on the average 14.8 mm., and has varied between 26 and 9 mm.

I need not say that the *antero-posterior diameter of the wide part of the excavation* does not or almost not change.

Transverse diameters of pelvis. Küster thinks that the movement executed by the sacrum is exactly the contrary to what has been observed in rachitic pelvis, and conform to this idea he says to have observed a diminution of the distance of the iliac spines. I have examined in regard to this point 127 women in the puerperal state and found that by Walcher's position this distance and that of the *cristæ* was not altered in 24 cases, was diminished in 22 and increased—aver-

FIG. 2.



age 5 mm.—in the other 81 cases. The experiments on the five corpses gave the same results. Contrary to Küster's opinion I believe that the action of the sacrum is not exactly opposed to that which occurs in rachitic pelvis. In Walcher's position the postero-inferior part of the iliac bones is drawn towards the median line and the postero-superior part must make a movement in the inverse direction. By this movement there must be a tendency of increasing the transverse diameter of the brim. And really, my mensurations in 5 cadavers, have given by the change of the lithotomy position into that of Walcher an increase

of this diameter of 3.2 mm., on the average, 4 mm. in maximum, 2 mm. in minimum. My results are thus in contradiction with those of Klein.

Variations of the form of the pelvic cavity. After my five cadaver mensurations I have constructed a design of the schematical form of the pelvic cavity, in saggital sections, in the lithotomy position and in that of Walcher. This design is given in Fig. 1.

Fig. 2 represents the schematic design of the form of the brim in the two positions.

I shall not speak of the practical consequence of these considerations because they are clear enough and having, moreover, mentioned them in my paper read at the 5th congress of the Italian Obstetrical and Gynecological Society.

THE INFLUENCE OF THE POSITION OF THE WOMAN ON FORM AND DIMENSIONS OF THE PELVIS.

EXTRACT FROM THE REPORT OF DR. G. WALCHER, STUTTGART.

WALCHER memorizes the ancient doctrine, taught by Ambroise Paré and Severinus Pinæus, *i. e.*, the expansion of the pelvis during labor. This doctrine, contradicted by Andreas Vesalius was finally refuted by Hendrik van Deventer, the founder of the doctrine of the contracted pelvis. Since his time the pelvis is considered as a solid ring, as long as the symphyses are intact. In 1804 Van My gives as his opinion that the base of the sacrum is dislocated backwards after symphyseotomy, whereas G. Vrolik, in 1807, defended an opposite view.

LUSCHKA proved (1850) that the pelvic joints are real articulations, pregnancy and labor increasing their mobility by the juiciness of the cartilages and ligaments.

Next, H. Meyer (of Zurich) has proved that rotation of the iliac bones on a transverse sacral axis is possible, and Korsch demonstrated, in his thesis (1881) that the pelvic dimensions may be augmented up to 3-10 millimeters.

The researches of Budin and Baladin, on living women, prove a mobility of the pelvic articulations, allowing an enlargement of the pelvic dimensions, although almost insignificant in the brim.

WALCHER then mentions his own researches, begun in 1885 on dry pelvises, in which he found that the antero-posterior diameter of the brim

is changeable, as soon as the sacro-iliac articulations allow however slight a movement. He could not continue his researches until 1889, and then he persued them in vivo. He started from the idea that it might be possible to obtain an enlargement of the conjugata vera, if the iliac bones could be made to rotate forward and downward. To obtain this rotation he made use of the thighs as a lever. As the ligaments of Bertini prevent an excessive displacement of the femora with regard to the iliac bones, these will be obliged to displace themselves and to make a rotation as soon as an effort is made to exceed the limit formed by the Bertini ligaments. When the sacrum is fixed, an enlargement of the antero-posterior diameter will be obtained in this way.

WALCHER's ideas were confirmed by his researches. He could make the conjugata vera vary circa 8 millimeters and he published his results in the *Centralblatt für Gynæcologie*, No. 51, 1889.

When a woman at full term is placed on the border of a table in such a way that the thighs are lifted against the abdomen, the promontory is more easily to be reached than in the dorsal position. In six cases the length of diagonal conjugata was by Fröschle, I. para, 10.3 centimeters; Bröckel, II. para, 10.2 centimeters; Stockburger, IV., para, 10.2 centimeters; Heckel, I. para, 10.4 centimeters; Bischoff, IV. para, 10.2; Hetzler, III. para, 9.7.

Lowering then the thighs as much as possible he found that the promontory was dislocated backwards. Subsequent measurement then gave the following result: Fröschle, 11.1 centimeters, *i. e.*, a difference of 9 millimeters; Bröckel, 11.6 centimeters, *i. e.*, a difference of 13 millimeters; Stockburger, 11.0 centimeters, *i. e.*, a difference of 8 millimeters; Heckel, 11.2 centimeters, *i. e.*, a difference of 8 millimeters; Bischoff, 11.5 centimeters, *i. e.*, a difference of 13 millimeters; Hetzler, 10.5 centimeters, *i. e.*, a difference of 8 millimeters.

When the pelvis is only moderately contracted, the promontory cannot be reached when the thighs are lowered.

The diagonal conjugata is, therefore, not a constant, but on the contrary a variable dimension.

He could demonstrate this variability in a woman who died of eclampsia and found a variability of the conjugata vera of 8 millimeters.

The publications of Zalasky and G. Klein confirmed the essential part of Walcher's results. However, Klein thought he might substitute the thighs by a weight attached to the anterior pelvic wall. This is erroneous, because the action of the femora as a lever then fails. Still Klein found once a difference of 11 millimeters. The differences stated by Walcher are, on the average, greater on account of his ex-

periments being made on pregnant women, whilst Klein made his experiments on cadavers of every kind.

The introduction of symphysiotomy (1893) caused new investigations to be made. At the congress of the German obstetricians at Breslau (1893), Dührssen and Fehling adopted the position with hanging thighs, the advantages of which were confirmed by observations taken in Leopold's clinic by Wehle. Walcher will not discuss the unparliamentary attack made by Varnier. In the last years a great number of papers were published, almost all favorable for Walcher's ideas.

As to the practical side of the question, Walcher arrives at the following conclusions.

In moderately contracted pelves there will be scarcely any reason for using the position with hanging thighs, especially when there is a head-presentation and when the uterine contractions are regular. When the woman is allowed to choose for herself the most convenient position, she will herself place her thighs in the most favorable position for the enlargement of the pelvis. When the contractions are insufficient and the head does not enter the brim, the woman may be placed now and then in the position with hanging thighs, and in the same time the head may be pressed into the pelvis according to Hofmeier's suggestion.

Above all things it is in *obstetrical operations* and particularly in applications of the forceps, the head not having passed the brim, and in extraction after podalic turning, that the supine position is useful. When the head has not wholly entered the cavity, the woman being in the position with hanging thighs, the femora must be elevated again, whilst traction on the head is continued, to displace the anterior part of the pelvis upward. Once the head being in the excavation, the extraction ought to be finished in the obstetrical position.

WALCHER refutes the opinion that this position should have been already indicated in Scipione Mercurio, as this author merely suggests placing the woman in that position to facilitate the examination of the genital organs in stout women. Before Walcher's first publication nobody in the world had a doubt that the pelvic dimensions could be varied by changing the position of the woman.

INDICATIONS OF CÆSAREAN SECTION AS COMPARED
WITH THOSE OF SYMPHYIOTOMY, CRANIOTOMY
AND PREMATURE INDUCTION OF LABOR.

BY FANCOURT BARNES, M.D., F.R.S.E.,

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of London.

There is no doubt that the practice of obstetricians of repute in the present day is to widen the limits previously enforced for the performance of the Cæsarean operation. The enormous mortality which attended the operation 26 years ago, and which was computed in 1880 from a series of 138 cases, by Harris, at 8.12 per cent., has been so far reduced that in experienced hands it is little higher than that of ovariectomy. Thus Leopold of Dresden has reported 50 cases with a maternal mortality of 8 per cent., and Olhausen last year reported a series of 29 with a maternal mortality of only 6.8 per cent. This improvement is due entirely to the improvements introduced during this period in the technique of abdominal surgery, and especially in the method of suturing the uterine wound. In several instances Leopold and Olhausen have twice performed the operation upon the same subject with a successful result, and the fear previously expressed as to the ability of the uterine cicatrix to withstand the distention of the growing ovum should subsequent pregnancy occur, has been proved to be groundless. Since the previous strict limitations of the operation to cases in which delivery per *vias naturales* was absolutely impossible, was largely in consequence of the heavy mortality attending it, the present notable diminution of its mortality has naturally reopened the question of its applicability to other conditions than those offering an absolute bar to delivery in any other method. In other words, the question now arises whether the Cæsarean operation should not be performed in order to save the child, in circumstances previously regarded as necessitating craniotomy.

Another recent tendency which is becoming more and more manifest is to regard operations involving the destruction of a living child in utero as unworthy of the present high efficiency of the obstetric art. It ought to be possible to devise a method by which the lives of both the mother and the child can be saved, and there are indications that we are arriving at that desirable end. Craniotomy for the delivery of a child

which has already perished during labor is, of course, a procedure to which no exception need be taken, but the indications for this operation should now be modified to the extent of interdicting its performance upon a living foetus until the possibility of adopting alternative measures, compatible with its survival, have been fairly considered. Of these alternative procedures there are three, *viz.*: Induction of premature labor, Symphysiotomy and the Cæsarean Section.

Induction of premature labor is, of course, limited in its applicability to cases in which the patient comes under observation during pregnancy, and a prognosis of difficult labor can be established. The limits of pelvic space requisite for the passage of a viable child are well recognized and require no comment. The methods of starting labor have received no notable additions in recent years. The maternal mortality of the operation in competent hands is probably not more than 1 to 2 per cent., but the foetal mortality is unfortunately high, being placed by the most successful operators at 33 per cent. No amount of technical skill can diminish this high rate of foetal mortality for it depends upon conditions over which the operator has no control, *viz.*:

- (1) the delicacy of the premature infant, and its consequent liability to suffer from the effects of labor.
- (2) the frequent necessity for interference during labor, owing to malpresentations, and deficient uterine action. .
- (3) the liability of the child to perish from malnutrition within the first few weeks of extra-uterine life.

Premature labor, therefore, while offering escape from danger as regards the mother, is of necessity attended with a heavy foetal mortality. It cannot accordingly be regarded with entire satisfaction, for the aim of the obstetrician is not only to deliver the mother, but to bring a child alive into the world, under conditions favorable to its ultimate survival.

The other two alternatives, symphysiotomy and the Cæsarean sections, being operations performed at term, naturally offer more favorable chances for the child. Under conditions which prevent the delivery of a living child, *per vias naturales*, these two operations offer the only practical alternatives. Symphysiotomy must of necessity be very strictly limited in its application by the amount of pelvic space available. The object of the operation is to obtain a temporary increase in the size of the pelvis sufficient to allow the delivery of a live child by forceps, as an alternative to craniotomy. The amount of increase in the conjugate which can be safely obtained in this manner without injury to the sacro-iliac synchondrosis is only half an inch; the

operation is, therefore, only applicable to a small number of cases, *viz.*, those which lie just outside the limits within which delivery by forceps or turning can be effected. Further it is impossible to foresee the amount of dilatation which may occur under the pressure of the forceps when the foetal head is drawn through the pelvic brim and, therefore, the operator is unable to control the amount of injury he may inflict on the bladder and other soft parts. It is not a method of delivery, but a method of facilitating delivery, applicable to only a small class of cases. The mortality of the operation has always been and still remains, a large one, for a surgical procedure apparently so simple as this. Neugebauer has estimated the mortality of 108 cases recorded previous to 1860 at 36.1 per cent. for the mothers, and 44.4 per cent. for the children. Later results have improved a good deal, but even in the hands of Pinard, the mortality from 1892 to 1896 was 10.84 per cent. for the mothers, and 14.5 per cent. for the children. It will be observed that these figures compare unfavorably with those of Cæsarean section already mentioned, the mortality of symphysiotomy being actually more than double that of Cæsarean section.

Comparison of Cæsarean section with symphysiotomy, in the light of modern results, seems entirely in favor of the former. There are no limits to the application of the Cæsarean operation; it can be performed in the worse cases of pelvic contraction; in obstruction for uterine or extra-uterine tumors it offers not only a means of delivery, but also can be combined with complete removal of the cause of the obstruction; when the obstructing cause is irremovable, the patient can at the same time be sterilized and thus saved from the recurring risk of future pregnancy; it is undoubtedly the most rapid means we possess of emptying the uterus, and may, therefore, find application in conditions of urgency, apart from obstructed labor; and lastly the mortality attending it, both for the mother and the child is less than that of symphysiotomy, and is steadily diminishing. The following table compares the most recent statistics of the two operations:

	<i>Maternal mortality.</i>	<i>Fœtal mortality.</i>
Symphysiotomy	10.8 per cent.	14.5 per cent.
Cæsarean section	7.6 " "	7.6 " "

If we now refer to the operations done during the last ten years in the Royal Maternity Charity of London we are met on the threshold of our inquiry by the complete absence of the Cæsarean section. During those years we delivered no less than 40,000 women, and among these deliveries no indication for Cæsarean section presented itself.

The explanation of this remarkable fact is a simple one. It is explained by the absence of pelvic deformity in the Metropolis of London. This absence is undoubtedly due to the improved and still improving hygienic conditions under which the poor of London exist. It must be further borne in mind that year by year they are recruited by many thousands of destitute alien immigrants who might be supposed to furnish a certain number of cases of pelvic deformity. Among these 40,000 deliveries, only 228 cases required the assistance of forceps, and of these 228, only one woman died. We, therefore, find that forceps is required in only 5 per mille of all cases of labor. Among the same number version was called for in 52 cases, and here also, only one woman died. Craniotomy was required in only 14 cases out of the 40,000, which sufficiently proves the rarity of pelvic deformity.

The figures given of the Royal Maternity Charity may be regarded as trustworthy and accurate. They are under the control and supervision of the Registrar of General Births, Deaths and Marriages, and it is well known that this functionary watches deaths of mothers in childbed with the most jealous care. The conclusions at which I arrive are:

- (1) As regards symphysiotomy I consider that the operation has not justified its existence, and I cannot help thinking that in a few years the eminent obstetricians who have been advocating it, will abandon its use.
- (2) Induction of Premature Labor, within certain limits, will always hold a recognized and useful position among obstetric operations.
- (3) And, lastly, we are forced to the conclusion, after a careful study of the latest figures which have been published on Cæsarean section, that it is a scientific and justifiable operation and that it will be more widely resorted to in the future, as the science of obstetrics advances, than it has been in the past.

INDICATIONS FOR CÆSAREAN SECTION AS COMPARED WITH THOSE FOR SYMPHYSIOTOMY, CRANIOTOMY, AND PREMATURE INDUCTION OF LABOR.

EXTRACT FROM THE REPORT OF PROFESSOR LEOPOLD, DRESDEN.

Professor Leopold makes a very exact classification of the various degrees of pelvic deformity, and distinguishes between the cases of primiparous and those of multiparous women.

Three degrees of contraction ought to be distinguished :

I. The conjugata vera is more than 7 centimeters in the contracted nonrachitic or rachitic pelvis, more than $7\frac{1}{2}$ centimeters in the justo-minor pelvis.

II. The conjugata vera is less than $7-7\frac{1}{2}$ centimeters, but more than 6 centimeters.

III. The conjugata vera is less than 6 centimeters.

In the first group primiparæ generally have a tolerably good labor. The method of proceeding consists in preserving the membranes and waiting. The contraction in itself makes no demand on operative treatment. When the membranes are ruptured, the kolpeurynter may be introduced or the descent of the head may be facilitated by placing the woman in Walcher's position.

With care and patience many useless and dangerous operations can be avoided.

When the head does not enter the pelvic brim—perhaps on account of a bad presentation (the case approaches the second group)—a distinction is to be made between cases treated in hospital and in private practice.

In the hospital, Professor Leopold does not hesitate to perform the Cæsarean section, when all other means have proved useless, and *when mother and child are in good condition*. *When the child is in danger* he prefers craniotomy, certainly the only legitimate operation when the child is dead.

In home practice craniotomy is the only indicated operation, when the head is retained by a pelvis, too narrow to allow the passage of a living child.

Though Pinard has given as his opinion that "craniotomy of the living child ought never to be performed" and that "embryotomy of the living child is condemned," Professor Leopold, appreciating the ideal view taken by the celebrated French obstetrician, agrees with Charles (of Liege), "that it is not easy to act up to these rules."

Doubtlessly the craniotomy of the living child ought to be avoided as much as possible, and an operation, inoffensive for the child, ought to take its place, but *in difficult cases in private practice*, craniotomy, which saves the mother, is preferable to Cæsarean section or to symphysiotomy, which give a considerable maternal mortality.

In the third group Cæsarean section alone is indicated, forceps and version being impossible, and the extraction of the child after perforation, even after symphysiotomy being very difficult, if not counter-indicated.

With *multipara* the difficulties of labor are greater because of the greater weight of the foetus and the lesser intensity of the contractions of the uterus and the abdominal walls.

In private practice, the premature induction of labor, either by the bougie, or by the intra-uterine bag, is and will be the choice operation in the pelves of the first group, notwithstanding the brilliant results of Cæsarean section and of symphysiotomy.

With the use of the bougie, the place of insertion of the placenta is to be taken into consideration. The converging or diverging of the Fallopian tubes and the round ligaments enables us to ascertain this place, and the bougie ought to be introduced in that uterine part which is opposite to the insertion of the placenta. During labor, rupture of the membranes has to be avoided and the descent of the head to be assisted, for, in premature labor, the prognosis of head-presentations is far better than that of other presentations. By the aid of Walcher's position the conjugata vera is widened from $\frac{1}{2}$ to 1 centimeter.

The results of premature labor are very satisfactory. Many obstetricians have noted from 60 to 80 per cent. living children, on leaving the hospital the eleventh day p. p.

In private practice the difficulty for the obstetrician is to determine the stage of pregnancy, the exact pelvic mensuration, and to obtain all that is necessary for the child (conveuse, nurse, etc). A good deal of the bad results are due to such precautions being neglected.

When the accoucheur is called and labor has begun with a *multipara* of the first group, above all things rupture of the membranes must be prevented, the colpeurynter must be introduced, and then wait for complete dilation. If at that moment the membranes are intact, Professor Leopold prefers the poddic version followed by the extraction, facilitated by the enlargement obtained by Walcher's position. Although by the aid of complete narcosis, version is not impossible some hours after the rupture of the membranes, the results for the child are still a good deal less favorable, the difficulty or even the impossibility of version necessitating often dangerous operations.

In the pelves of the second group craniotomy should be performed when the child is dead. Professor Leopold prefers also craniotomy to the other operations when the child is in danger or the mother exhausted or ill. When the child is in good condition, Cæsarean section or symphysiotomy can be done in *hospital practice* (personally, Leopold prefers the first operation).

In *private practice* these two operations may be, now and then, pre-

ferred to craniotomy, when the obstetrician is very skilful, disposes of sufficient assistance and when the woman is in very good condition.

In the third class of pelvis, Cæsarean section is the only operation indicated, alike for primi or multiparæ, symphysiotomy being forbidden by the excessive contraction of the pelvis.

Conclusions.

I. Before term.

1. When there has been one or more difficult labors caused by pelvic deformity, premature induction of labor is indicated when the pelvis is not too much contracted (conjugata vera more than 7 centimeters in flattened pelvis, more than $7\frac{1}{2}$ centimeters in the justo minor pelvis). The best moment for intervention is the thirty-fifth week of pregnancy. Good results are not to be expected, unless the membranes remain intact and there as a head presentation.

II. At term.

2. Craniotomy is indicated:

a. When the child is *dead* and labor does not advance, even when the pelvis is only slightly contracted.

b. When the child is in *danger*, the contracted pelvis being an obstacle for spontaneous birth, forceps and version being too dangerous or impossible. This rule is valuable equally for hospital and home practice. The danger for the mother is too great to risk Cæsarean section or symphysiotomy when it is not quite sure that a living child will be born.

c. When the child is in *perfect condition*, craniotomy will be performed only as an exception in hospital practice. But in private practice it is indicated when spontaneous birth, forceps and version are excluded and the termination of labor is necessary, the obstetrician, all circumstances duly considered, regarding Cæsarean section or symphysiotomy too dangerous. The conjugata vera must be more than 6 centimeters.

In exceptional cases, when for private reasons it is important that the child is born living, should it be only for some minutes, the advice of a colleague is to be asked and the family of the woman is to be acquainted with all the dangers accompanying the operations by which the child can be saved.

3. The *Cæsarean section* has absolute or relative indications. In pelves with a conjugata vera of $7\frac{1}{2}$ —6 centimeters the indication is a relative one. When this diameter is less than 6 centimeters, the indication is an absolute one.

Cæsarean section on relative indications requires the fulfilment of the following conditions; a spontaneous birth being impossible, forceps and version inadmissible the child *in perfect condition*, and the woman either in a hospital or in circumstances quite as favorable as to the operation itself and as to subsequent nursing.

When the circumstances are not favorable enough, craniotomy of the living child is to be preferred.

4. Symphysiotomy is only indicated in pelves with a conjugata vera of $7\frac{1}{2}$ to $6\frac{1}{2}$ centimeters; the indications are, therefore, much more limited than those of Cæsarean section and do not all regard the pelves of the second-class. With this restriction symphysiotomy may compete with Cæsarean section on relative indication, and requires the same conditions. When these conditions are not fulfilled, craniotomy must be performed.

The choice between symphysiotomy and Cæsarean section as relative indication depends on the experience of the operator.

The results of both operations, performed under the same conditions, are almost equal for the mother as well as for the child.

ABSTRACTS.

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PÆDIATRICS.

UNITED STATES.

Why the Child strains at Stool and the Way to Its Relief.

THOS. CHAS. MARTIN (*Columbus Med. Jour.*, June 13, 1899) discusses the imperfect mechanism of defæcation in infants. Examination reveals that the walls of the sigmoid flexure and rectum are thin, and that it is impossible to distinguish the longitudinal muscular bands, so that the intrinsic power of peristalsis must be much less than in the adult. Moreover the mesentery of the sigmoid flexure and of the rectum is very long; and, though the middle and lower thirds of the rectum are not completely invested, the space that is bare of peritonæum is not applied directly to the bone, but separated from it by loose connective tissue. This looseness of connection, together with the great length of the colon, obviously leads to angulation of the gut, and thus resistance to the passage of fæces. Another obstructive feature is the rectal valves, which the writer has not failed to find in more than three hundred subjects examined, though their existence has been unrecognized and even disputed by some; generally there are three, sometimes, four or two. In infants these valves are well developed, spanning half the gut. Its structure (section of the adult valve shows thickened mucous membrane at its free border with a heavy layer of fibrous tissue beneath and bundles of circular muscular fibres in the middle) proves it to be a typical anatomical valve, and as such an essential obstruction to the passage of fæces. Another factor is the contraction of the pelvic bony outlet in infants, the transverse diameter being little over half an inch, while the pubo-coccygeal diameter is even less. Thus while the sigmoid flexure and rectum, in which the fæces when firm are formed, possess four or five times the expansibility of the anal outlet, the latter is so limited as hardly to allow the passage of any but fluid fæces.

Besides the difficulties of defæcation, the undeveloped anatomy of

the organs may entail prolapse of the rectum or inguinal hernia. The former is due to the great length of the mesentery and the undeveloped state of the contiguous structures which should support the rectum. The latter arises from the length of the mesentery and from the relative smallness of the pelvis as compared with the abdominal cavity, which results in the inguinal ring being in almost as dependent a position as the anus itself.

We perceive from their causes that the normal infant's escape from these difficulties is assured by the process of development; nevertheless they are of enough importance to be alleviated. Diet, hygroscopic suppositories and enemata will favor fluidity and easy descent of the fæces. Massage over the colon develops the auxiliary and intrinsic propulsive muscles, propels the contents of the gut along, and relatively reduces the obstructive features of the valves. Overgrowth of the rectal valve may be overcome by dilatation, or if necessary it may be cut. As the pelvic bones are ununited at birth and partly cartilaginous it is possible to spread the pelvic outlet. The nurse may be instructed to cut her nails close, then introduce the smallest finger, well-lubricated, through the anus; and thus to practice daily dilatation, graduating from finger to finger, till the required degree be reached; the introduction of the finger also stimulates the mechanism of defæcation. Rachitic subjects demand forcible divulsion of the tuberosities.

In complete prolapse the measures above should be employed together with proper posture of the subject during and after defæcation. Extension of the legs best overcomes the tendency, so that at the time of stool the subject should take either the erect-extended or the horizontal-extended position. The rectum is best replaced in the knee-chest posture, and recurrence best avoided by the horizontal-extended position; the buttocks may also be strapped together. *Acquired* inguinal hernia in infants should be treated if possible by the truss, for the reason that the child's growth and pelvic expansion change mesenteric to parietal peritonæum, and thus limit the mobility of the intestine, and also lift the abdominal ring into a more protected position.

Otitis of the Exanthemata from the Standpoint of the Pædiatrician and General Practitioner.

J. HENRY FRUITNIGHT (*Med. News*, July 1, 1899), notes the following points from an experience of nearly five thousand cases of exanthemata, especially scarlet fever and measles. Fully one-third developed otitis of greater or less severity, and twenty-eight of these

were bilateral. The frequency of the affection seemed to bear no direct ratio to the severity of the general constitutional symptoms, the mild cases often exhibiting it while the severe ones escaped; of course, in the rapid, malignant cases the patient died too soon to develop the complication. In general it appears in those cases that have much irritation, congestion, or inflammation of the faucial mucous membrane, particularly if large tonsils or adenoids be present. If these cases of otitis were treated at their very outset, the patient would be cured with much less suffering and much less likelihood of defective hearing or total deafness. Too often the physician ignores the complaints of pain in the ear until, when the symptoms become urgent, much valuable time has been lost. The writer's routine practice is to watch the ears in eruptive fever; and the involvement of the mastoid, so often occurring in cases that have received none or perfunctory treatment, has never occurred in such cases as he has treated from the beginning. Children, the subjects of a constitutional taint, tuberculous, rachitic, syphilitic, or "strumous," show a marked tendency to complicating otitis. .

A few points in treatment are noted. Scrupulous attention should be given to keeping the nose and throat clean. Regarding paracentesis, the writer does not think it always necessary; but, if the membrane is projecting and much congested, and the patient in great pain, it should be done. In the writer's experience, the cases that are slow to suppurate are the ones that require this measure; in the suppurative cases the perforation often occurs without warning. Efforts, however, should always be made to abort the attack, as much time and trouble in its cure may thus be saved. It is true that the untreated cases usually get well, but only after a chronic course, and, perhaps, with loss of hearing; the accompanying otorrhœa, the writer has lately treated as follows: first, five drops of peroxide of hydrogen are instilled in the ear; after a few minutes the ear is flushed with lukewarm water till the water returns clear; the canal is then dried with cotton, and three drops of an alcoholic solution of boric acid (five or ten grains to the ounce) dropped in and allowed to remain. This treatment must be continued so long as there is a vestige of discharge.

The Treatment of Summer Diarrhœa in Infants.

HENRY DWIGHT CHAPIN (*Ibid.*, July 15, 1899), considers the summer diarrhœa of infants from three points of view: preventive, dietetic and medicinal. Among the causes are too frequent feeding, and in

too large quantities, especially from the bottle; improperly modified cow's milk, and the use of various other foods; and hot weather, which causes fermentation in the digestive tract, lowering of the infant's vitality and dangerous changes in the milk itself. Seibert has shown that epidemics begin when the average minimum temperature reaches 60° F., a condition beginning in June and lasting through September. The highest death-rate occurs in July, although it is but slightly hotter than August, for the reason that the weaker babies, already exposed to several weeks of hot weather, then die off. Bottle babies are the greatest sufferers from the fact that the weather affects both the food and the baby.

Preventive measures: The city streets should be kept scrupulously clean. The milk supply should be required to conform to a certain standard of freshness, the number of its contained bacteria bearing a direct ratio to its age. If the dairies were under careful government rules and the milk required to be delivered to the consumer within twelve hours, summer diarrhoea would be reduced to a minimum. Another important matter is the planting of trees and the construction of small parks. Dr. Stephen Smith states that an average temperature of 54° F. is most conducive to public health, as at that point decomposition is slight and normal temperature most easily maintained. Temperatures other than this require the action of the heat-centers to maintain equilibrium; and these centers being slightly developed in infants, it follows that they suffer most from prolonged hot weather. Much heat is both conserved and reflected by the streets and buildings, much also generated artificially. The modifying effect of trees is apparent from the fact that they maintain an average temperature of 54° F. the year round, cooling the air not only thus, but also from the constant exhalation of watery vapor from their leaves, the latter occurring in the hottest part of the day; moreover they purify the air by absorbing CO₂ and giving out oxygen.

Much may also be done in the house, principally in the line of extra cleanliness. Food should not be allowed to stand about. The milk as soon as received should be boiled or pasteurized and modified for the day's use. Diapers should be at once removed to a solution of chloride of lime. During the heat the rooms should be closed and at night freely aired. Mothers should be taught to consult physicians with regard to preventive measures. Babies are dressed too warmly in summer, often a single garment being all that is necessary. Fresh air can be had in plenty early in the morning and late in the afternoon. Seaside trips do good if they do not involve too much heat or fatigue

and spoiled food. Frequent bathing is of value; babies can be left to play in a tub of tepid water for several hours, especially during the hottest part of the day; if too small for this, they may be sponged with water and vinegar or alcohol. Bottle babies should have less food, more highly diluted, and perhaps at longer intervals, water being given freely; diminution of the food would alone prevent many diarrhœas.

Dietetic treatment: All forms of milk, even the breast, must be withheld till vomiting ceases, water being frequently given, in small doses if rejected. If milk has to be withheld long, other nourishment must be substituted; a very good substitute is the white of an egg stirred in a half glass of cool water with the addition of ten drops of aromatic spirits of ammonia. Another substitute is a thin gruel made from barley or wheat flour and cold whey, the starch being dextrinized by some diastase preparation. Mutton broth or beef juice diluted with cold water, the fat having been carefully removed, makes a refreshing drink. With the subsidence of the acute symptoms, milk, highly diluted and at long intervals, may be resumed; a prescription might call for fat, 1 per cent., sugar, 4 per cent., proteids, 0.5 per cent.; or fresh milk may be diluted five or six times with sugar water. The digestion of the tough curd of cow's milk is best overcome by dilution with gruels made of wheat or barley flour, partially or completely dextrinized. The favorable clinical results obtained by this procedure have been confirmed by physiological experiments made by the writer, both in artificial digestion and upon a dog with gastric fistula..

Medicinal treatment: The indications for drugs are few. The alimentary tract must be cleared. Vomiting and stopping the milk soon clear the stomach; if the vomiting continues, the stomach may be virtually washed by making the patient drink tepid water and reject it; washing with a tube is not often indicated, but may be useful once if there be much irritation and much mucus. Six or eight hourly doses of calomel, one-tenth grain, should be administered; sometimes a good dose of castor oil is effectual if the stomach is not too irritable. Irrigation of the lower bowel with normal salt solution often hastens elimination, a hard rubber rectal tube being preferable in inexperienced hands to a catheter. The drug the writer has found most useful is the subnitrate of bismuth in large doses, from ten to twenty grains every two or three hours to a baby of from six to twelve months; bismuth reaches the ileum and colon, where irritation and fermentation remain longest. Most so-called antiseptics are irritating and it is impossible for them to sterilize the intestinal tract. Ten to twenty drops of aromatic ammonia seem to stimulate the mucous mem-

branes and refresh the infant. Whiskey seems to lower the digestive powers, and should only be given in collapse or great weakness. Opium, once abused, is now perhaps too little given; it is contra-indicated if the bowels are not free of their irritating contents, if the stools are scanty and foul, or if cerebral symptoms threaten; but where there is rapid peristalsis and profuse glandular secretion it may even save life.

Enuresis Nocturna in the Female.

GUSTAV KOLISCHER (*Memphis Lancet*, August, 1899), recognizes two chief divisions of nocturnal enuresis, the first dependent on distinct anatomical changes in the urinary apparatus, and the second upon nervous or tropho-neurotic causes. Among the first may be mentioned conglutination of the glans clitoridis with its prepuce; coalescence between the urethra and cords drawing to (*sic*) the hymen; ectropion of the mucous membrane of the external urethral orifice; also he has observed, by cystoscopy in obstinate cases, the internal urethral orifice lined by red, tongue-shaped proliferations of the urethral epithelium into the trigonum. A uniting link between these cases and the purely nervous ones are those in which the affection seems to depend upon reflex irritation from some pathological change in another part of the body, as, for instance, adenoids in the pharynx. In the former, of course, the treatment should, according to the case, consist of loosening the prepuce, severing of the hymenial cords, or thermo-cauterization of the affected part of the urethra; in the latter, appropriate treatment of the cause of reflex irritation.

The enuresis may be dependent upon general nervous diseases, as chorea minor, in which it is very favorably influenced by quinine. In cases without pathological change, Mendelssohn's explanation seems most plausible, that it depends upon the insufficient or impaired physiological function of an anatomically normal sphincter. When awake such children are able to support the involuntary closing apparatus of the bladder by accessory muscles, but when asleep this voluntary aid is lost. Favoring conditions may be irritability from lithæmia or uric acid, or lack of vigor from the various constitutional diseases.

Therapeutically we may make two classes: those in which the frequent micturition of earliest life becomes permanent, usually based on a neurotic disposition and disappearing at puberty; and those in which the condition establishes itself later when the function had been previously normal, these cases generally depending on pathological changes and outlasting puberty. Regarding therapy the writer places

little faith in drugs. The plan of putting the patient in a moderate Trendelenburg position at night he also condemns; this depends on the theory that the impulse to micturition arises from the contact of the urine with the internal urethral orifice, which is thus delayed. The writer believes that the impulse depends upon distension of the bladder, which would make position of no importance. Moreover, patients do not readily keep the position while asleep. Many authors recommend electricity, faradic or galvanic, but the writer has never been able to perceive benefit from its use. The temporary benefit which seems to accrue from galvanization of the urethra, he thinks, is due to slight abrasions caused by the procedure, which make micturition sufficiently painful to awaken the patient. He has obtained satisfactory and permanent results from Sænger's treatment—elastic dilatation of the urethra. A short straight sound is introduced till the end touches the trigonum; it is then pressed in different directions so as to dilate the urethra downward, to the left and to the right. Dilatation should be thorough, even forcible, but should last but a few minutes; the sittings may be at first daily, then every second or third day; usually improvement begins after the first few treatments. Other measures, such as the emptying of the bladder and the avoidance of drinking before going to bed, must be recommended; and general treatment, if there be a uric acid diathesis, constipation, intestinal parasites or any other unfavorable circumstance, must be instituted.

The Full Bath at 90° F., in Treatment of Scarletina.

D. S. HANSON (*Columbus Med. Jour.*, August 5, 1899) desires to point out the superlative value of the bath treatment in scarlet fever. It is especially applicable in cases that present an early high temperature or early severe nervous symptoms, or, as is more usual, both. It is of value at any period when the temperature is high, but does not, of course, so markedly relieve the later nervous symptoms that depend on organic changes.

During an epidemic, that comprised sixty-eight cases in three months, the writer found the results of medication very disappointing, and, seeing favorable reports from the use of Ziemssen's graduated bath, put the method into practice. Afterwards he concluded that the temperature of 90° gave as good results and was less depressing and safer. The technique is very simple: the child is put into a volume of water sufficient to cover the body and extremities, and remains there eight minutes, the skin being constantly rubbed. At the end of the time the

child is quickly dried and put to bed, the bath being repeated whenever the temperature reaches 103° , or the child becomes very restless. The effects of this measure are even more striking than those of the Brand bath in typhoid. Besides reducing temperature, the bath favors elimination, stimulates the circulation and the heart's action, and in some way inhibits the action of the toxins upon the circulatory, respiratory and reflex nervous centers. The writer has had strikingly prompt and favorable results in cases with severe nervous symptoms at the outset, and in no case in which he has used the baths have there been complications or sequelæ.

Aneurism of Aorta in a Child.

BERTRAM ROGERS (*Pædiatrics*, August 15, 1899) reports a case of aortic aneurism in a girl ten years and four months old. There was no history of rheumatism, chorea or scarlet fever. Examination showed marked anæmia, an apex beat displaced one inch to the right, a loud, rough systolic murmur heard all over the cardiac area, but loudest over the pulmonary region, and a distinct fremitus where the murmur was loudest. In the course of the disease the temperature was constantly raised, no drugs having any influence upon it; the murmur increased in loudness, being sometimes best heard over the aortic and at others over the pulmonary cartilage. The urine was normal and no embolism occurred. The child died suddenly about three months after admission.

Post mortem: There was some fluid and some flakes of lymph in the pericardium, and some roughening of the visceral pericardium. The left ventricle was much hypertrophied, and the aortic valves glued together with large vegetations. Half an inch above the right side of the anterior semilunar valve of the aorta a hole about two-thirds of an inch long passed upwards in the direction of the artery, opening into a small aneurism, which passed forward and appeared between the tip of the right auricle and the pulmonary artery in the auriculo-ventricular groove; it was the size of a hazelnut, and partly filled with clot. The other organs were normal.

In fifteen cases of aneurism in children, collected from the literature by R. W. Parker, eight had diseased aortic valves and only two healthy hearts. It seems that the disease follows the detachment of a vegetation, but how, it is impossible to say. The only explanation the writer can suggest in the case reported is that in some way the wall

of the aorta had become infected, and had consequently been weakened and had given way.

GREAT BRITAIN.

Diabetes in a Child Aged Three Years; almost Complete Disappearance of the Sugar during an Attack of Jaundice.

J. H. SEQUEIRA (*Lancet*, July 15, 1899) reports the case of a girl aged three years and two months, who, since an attack of influenza six months before, had suffered from thirst, lost flesh and passed large quantities of urine; the most prominent symptom, however, had been obstinate constipation and rectal prolapse. Beyond a dry, glazed tongue, some dryness of the skin and flabbiness of the muscles, the child's appearance was natural. The urine was acid, sp. gr., 1040, contained no albumen but much sugar. For purposes of observation the child's diet was left unaltered for one week; she grew worse, cried constantly for drink, and passed about 2500 c.cm. of urine in the twenty-four hours, containing 11 per cent. of sugar; there was no enuresis. After this period the patient's bread was toasted and potatoes and milk puddings were discontinued, with immediate change for the better. Still one week later a strict diabetic diet was begun, and marked improvement followed; the patient became comfortable, the thirst diminished, and the urine fell to 1000 c.cm., and a few days later to from 500 to 600 c.cm., with but 4 per cent. of sugar. Fresh honey was afterwards added to the diet, its sugar being principally lævulose which has little tendency to increase glycosuria; for two days the urine and sugar were increased, then fell again. Fowler's solution was found to have a definite effect, the quantity of urine falling still further to 500 c.cm., and the sugar to between 2 and 3 per cent.; diarrhoea set in, however, and the arsenic had to be stopped. About four months after admission the child seemed ill and her temperature rose to 102.8° F.; the sugar fell to 2 per cent.; two days later the liver was found to be slightly enlarged; after three days jaundice was observed, and the liver was palpable two fingers' breadth below the ribs; two days later the symptoms had increased, and the urine was bile-stained, sp. gr. 1020, and contained 1 per cent. of sugar. The quantity of urine was from 635 to 775 c.cm., and at the height of jaundice the sp. gr. fell to 1016, and the sugar to 0.7 per cent. Three weeks from the beginning of the attack the jaundice had disappeared, and the liver returned to normal, the sugar to 4 per cent. and the quantity to from 900 to 1100 c.cm. About two months later the child developed diph-

theria, and one week afterwards died in coma. During the entire disease there had been no peripheral neuritis, pulmonary complications, nor affection of the optic fundi. The urea had varied from 3 to 4 per cent. The necropsy was delayed and incomplete, but no gross signs of disease were recognizable, except slight cloudy swelling of the kidneys and hypertrophy of the wall of the urinary bladder.

The most interesting feature of this case is the diminution of the sugar during the jaundice. It could not have been due to obstruction of the bile duct, for cirrhosis is unaccompanied by glycosuria. It appears to be the result of the febrile state, being observed in other pyrexias; and it may be assumed that the toxins that produce the febrile state in some way prevent the glycosuria. However, the glycosuria did not disappear with the fever that accompanied the diphtheria; moreover, a transitory glycosuria may be noted in many severe cases of diphtheria, and in most fatal ones, and sometimes follows the injection of antitoxine; so that evidently the action of toxins and antitoxines upon sugar formation is worthy of investigation.

CANADA.

A Case of Sporadic Cretinism.

G. GORDON CAMPBELL (*Montreal Med. Jour.*, August, 1899) describes the following case of a girl, born of healthy parents and with normal brothers and sisters. Labor was prolonged and delivery by forceps, otherwise normal. At the age of six months, the tongue was observed to be large and the frænum was cut. At the age of three years the child had failed to develop, and a diagnosis of post-nasal adenoids was made, but operation was refused by the parents. The writer first saw the child when about five years old; she was then considerably under height, with a short thick body, large head and limbs, protruding tongue, typical features and expression; the hair and skin were dry, though the condition could hardly be called xeroderma; the abdomen was prominent, and there was a small umbilical hernia. Mental development was very limited; she was unable to talk, though she understood something of what was said; she did not laugh nor cry nor play, but was very timid, and sometimes became nervous and frightened.

Treatment was begun with Armour's desiccated thyroids, two grains three times daily; the patient developed acute thyroidism, and the dose was given twice and afterwards once daily. Improvement was at first slow; the child lost flesh, the hair fell out and her

health seemed to fail; it was soon seen, however, that her expression was changing and her bodily and mental condition improving. She has now (one year later) gained four inches in height, the thickness of the eyelids, nose, lips, and tongue, the prominence of the abdomen, the umbilical hernia, and almost all the subcutaneous fat have disappeared. Her expression, while not quite natural, is not that of a cretin; the disproportion of her limbs is not noticeable, and she has a new growth of fine silky hair. She is bright and vivacious, interested in her surroundings and talking about them, and able to help in the care of the younger children. She has lost most of her timidity.

This case shows the striking results of thyroid treatment and the smallness of the dose required; also that while the well-marked type is unmistakable, the early symptoms, especially in young infants, may be easily misinterpreted as backwardness or some other condition.

OBSTETRICS.

UNITED STATES.

Danger-Signals of the Pre-eclamptic State.

CHARLES JEWETT (*Brooklyn Med. Jour.*, August, 1899) says that eclampsia is conceded to be a preventable complication of pregnancy and labor. In the practice of obstetricians of special training, child-bed convulsions are unknown. The supervision of the pregnant state is neglected by both physician and patient in too many instances. Urinary analyses are practised only at long intervals, and in the later weeks, and are usually limited to testing for albumin. While the general conditions and all the emunctory functions must be closely observed, yet the first indications of danger are usually found in the urine. The three most important signs are albuminuria, diminished urea secretion and scant quantity of urine.

Albuminuria exists before convulsions occur in from 84 to 91 per cent. of eclamptic patients. In order to determine with certainty the presence or absence of albumin very frequent examinations should be made.

As long as the elimination of urea is near the normal—four or five hundred grains per diem—there need be little apprehension. Still a

marked falling off does not necessarily demand the induction of labor. The other urinary findings and the patient's general condition must be considered. In a case recently under observation the urea ranged from 192 to 240 grains per day during the ninth month of pregnancy, and yet the patient remained apparently in perfect health.

The quantity of urine passed daily is of great importance, personal experience leads the writer to believe that even in the presence of albuminuria and diminished urea secretion, eclampsia will not occur so long as the volume of urine can be kept at about 70 ounces in twenty-four hours. Of course, a patient may have chronic nephritis, in which the volume of urine is large, but eclampsia in such cases is infrequent unless an acute lesion supervenes. This class of cases, however, are usually recognized early in gestation and as a rule, the pregnancy must be terminated. The pregnant woman should be instructed to measure the amount of urine passed in twenty-four hours at least twice a week during the later months of pregnancy. The drinking of large amounts of water will, in many instances, keep the quantity up to the desired mark. Patients should be instructed to report to the physician in charge any departure from health, for the early recognition of dangerous symptoms is of vital importance.

Hydramnios.

JOHN O. POLAK (*The Post-Graduate*, August, 1899) says that hydramnios as a factor in the causation of malpositions, eclampsia, prolonged labor, foetal deformities and post-partum hæmorrhage deserves consideration. It often also obscures the diagnosis between pregnancy and abdominal tumors.

Acute hydramnios is usually produced by amnionitis, and develops rapidly. The chronic form may arise from various conditions; syphilis; excessive secretion of foetal urine; pressure upon the veins by the foetal tumor; exudation from a nævus or elephantiasis of the foetus; deciduitis; multiple pregnancy, with interference with the circulation of the weaker foetus and consequent placental oedema; general maternal anasarca; maternal hydremia.

The enormous distension of the abdomen interferes with respiration, circulation and nutrition, causing dyspnœa, cyanosis, oedema of the legs and feet, irregular heart action, and often persistent vomiting producing emaciation. The liability to eclampsia is increased, owing to the embarrassment of the functions of the kidneys and intestines by the hydramnios; the intra-uterine tension is also an excitant of the

paroxysm. Malpositions are common, as the excess of liquor amnii prevents the proper engagement of the head. Prolapse of the cord is another accident of frequent occurrence. Under the most favorable circumstances the foetal mortality is 25 per cent., and of those born alive many are deformed or feeble. Where the maternal interest demands it, rupture of the membranes may be necessary. The puncture of the uterus through the abdominal wall with a trocar and cannula has been suggested, and can only be condemned. Puncture of the membranes high up in the uterus with a long stiff catheter may be tried. By placing the patient in an exaggerated Trendelenburg posture, the liquor amnii drains away slowly, except during a uterine contraction, and syncope is prevented. One-twentieth of a grain of strychnine every hour, until half a grain has been given, is advisable. Instrumental or manual delivery should be avoided, if possible, on account of the increased liability to sepsis in the presence of hydramnios. Tamponade of the cervix and vagina with gauze may be tried where dilatation is slow or insufficient. The third stage must be carefully conducted without hurry unless there is hæmorrhage. When Credé's method is used, pressure must be made only at the height of the pain. An intra-uterine tampon is safe, securing prompt contraction and averting the danger of inversion.

The Determination of Sex.

F. A. DUNSMOOR (*Northwestern Lancet*, August 15, 1899) says that in investigating this subject letters were written by him to breeders of various kinds of stock, to physicians, physiologists and intelligent parents; and, while there was a diversity of opinions, yet the deductions from these and from personal investigation leads him to believe that Thury's theory is the correct one. Thury believes that the cause of sex lies in the ovum, and the degree of its ripeness at the time of fecundation results in the difference of sex; thus an ovum at the highest degree of ripeness when fecundated results in a male. This ripeness does not depend upon the time of development of the ovum in the ovary, but the time which elapses after its liberation from the ovary until it becomes impregnated by the spermatozoa. The fact that ovulation and menstruation do not always correspond in women explains certain cases which appear to contradict this theory. Thus if a woman ovulates subsequent to the menstrual flow, a longer time must be allowed for the full ripening of the ovum than simply from the beginning of menstruation.

Born, of Breslau, made a long series of experiments with frog's

eggs. The ripe eggs were taken from the female, and were fertilized by spermatozoa from the male. The result was 95 per cent. females. Now as no such discrepancy exists among frogs born under natural circumstances, it would seem to prove that there was no time for the normal ripening of the eggs, while waiting for the coming of the male. In most women the time required for the ovum to pass from the ovary to the vulva is about fifteen days, though in some it is much less.

Among most horse-breeders it is the custom to bring the mare to the stallion immediately after she is discovered to be in heat, if female colts are desired; while those desiring male colts usually wait until near the end of the "season." That the same holds true with cattle and other animals is the opinion of many large breeders, although several wrote that they had never been able to control sex in their stock.

Instances of conception occurring in women where the ovary on one side, and the tube on the other, had been removed, have resulted in male children. This would seem to support Thury's theory, for in order to enter the uterus the ovum must pass across the pelvis to the remaining tube and thence to the uterus, thus being longer in transit and consequently more mature. Another apparent exception is the birth of a female the result of a pregnancy occurring just before the menstrual period. But this is easily explained; the spermatozoa meets the immature ovum of the coming menstrual epoch, not the over-ripe ovum of the preceding period. The subject is always of deep interest, and even Schenk's theory amounts to the ripening of the ovum by the process of physiological combustion in the organism of the mother.

Management of Pregnancy, complicated by Abdominal Tumors.

RUFUS B. HALL (*Jour. of the Amer. Med. Ass'n.*, Sept. 2, 1899) says that in the discussion of this subject only ovarian and uterine tumors will be considered, leaving out the question of malignant growths.

The rapid increase in the size of the uterus, and the increased blood-supply during pregnancy favors the rapid growth not only of uterine, but also of ovarian tumors, so that frequently the first knowledge of the existence of a tumor comes when pregnancy is several weeks advanced. The grave question of an operation then presents itself, and not only the danger to the mother, but the possibility of the operation causing abortion must be considered. While no one would select the pregnant state as an ideal condition for operation, yet the danger of an operation does not seem markedly increased. It is impossible be-

fore operation to say whether or not abortion will occur. Some most severe operations, necessitating much handling of the uterus, have not interfered with the course of pregnancy, while abortion has followed comparatively trivial operations where all conditions were favorable. In cases where abortion does occur, the outlook for the patient is unfavorable.

In cases where a small ovarian tumor is fixed in the pelvis below the uterus, and cannot be lifted out, an operation is demanded; so also, when there are complications in the tumor itself, such as a twisted pedicle or a ruptured cyst, or where peritonitis, due to the tumor, exists. In cases where the ovarian tumor is of moderate size, and above the uterus, or of too large size to occupy the pelvic cavity, and yet causes no especial suffering to the patient, operation may be dispensed with unless complications arise.

In fibroid tumors of the uterus, occupying the lower segment of the uterus, and in such a position as to interfere with or prevent delivery at full term, an operation is demanded, and if the patient can be placed in good surroundings and operated on just before the full term, or at the commencement of labor, both mother and child may be saved. But many of these cases become so uncomfortable that it is necessary to sacrifice the child's life to save the mother. The pressure of the tumor on the ureters, which occurs in many cases, induces kidney complications, which puts the hope of waiting until full term out of the question.

The danger of hæmorrhage at the time of delivery must be borne in mind in the presence of intramural tumors, and the advisability of operating while the patient is in good condition should be carefully considered. Sepsis after labor is of frequent occurrence in cases of tumors, as the bruising of labor may start up inflammation or even gangrene. The method and time of operation must be determined for each case; no general rule will apply.

Justifiable Artificial Abortion and Induced Premature Labor.

W. C. BOWERS (*Ibid.*) says that abortion is sometimes required to save the life of the mother, while induced premature labor is often required for the interests of both mother and child. Neither should be decided upon without honest consultation and careful consideration. The possibility of waiting until the child is viable must be thought of in all cases.

In nephritis, where there is danger of eclampsia, or where the

woman's life will be shortened by irreparable damage to the kidneys, abortion should be performed when diet and medication have failed to benefit. In advanced tuberculosis the woman's life will undoubtedly be prolonged by a speedy termination of pregnancy. Aneurysm, unless superficially located, is an indication for prompt interference. In severe valvular lesions of the heart an early termination of pregnancy may be demanded. In chorea gravidarum there is a tendency to anæmia, prostration and insanity, and the advisability of abortion in such cases is a matter on which authorities differ. Peripheral neuritis, usually occurring late in pregnancy, may prove fatal unless labor is induced. Goiter depending on pregnancy is usually very vascular, and the rapid increase in size may cause death from suffocation, by compressing the trachea. Ligation of the thyroid arteries should be tried and if no relief is afforded the uterus must be emptied. Leucocytosis and pernicious anæmia are rare complications of pregnancy and may require induced labor if the anæmia deepens in spite of all treatment. Diabetes mellitus in the pregnant is exceedingly rare; the prognosis for the child is unfavorable, and recovery of the mother usually occurs after delivery, so that labor should be induced if the patient's condition prompts it. Melancholia, hystero-epilepsy and insanity require close study to determine how much the trouble depends upon pregnancy, or is aggravated by it, before radical measures are adopted.

Irreducible displacements of the uterus, especially if uræmic symptoms are present, and old adhesions binding the uterus down in the pelvis, are positive indications for interference.

Antero-posterior contraction of the pelvic inlet to 2.36 inches, or occlusion of the genital tract by tumors, cicatrices, etc., call for interference unless the patient elects Cæsarean section. Uncontrollable hæmorrhage may require prompt abortion; even profuse and prolonged epistaxis may necessitate emptying the uterus. In missed abortion, dead twin, or vesicular mole the uterus should be emptied as soon as the diagnosis is established. A fatal malady of the mother may demand premature labor in the interest of the child. If children have perished in previous labors because of disproportionate size, premature labor should be induced. Finally, persistent and uncontrollable vomiting may demand the interruption of pregnancy.

Placenta Prævia.

THOS. H. BAKER (*Obstetrics*, September, 1899) defines this condition as a placenta which has an attachment in the lower zone of the

condition of the inferior part of the pubes causing a diminution of the diameter of the inferior strait. With the first, there is interference with the engagement of the presenting part, but after this point delivery is easy and rapid. With the latter the engagement may be easy and the presenting part reach a point near the vulva, but here it will be held between the lower margin of the pubes and the sacrum, and unless the uterine contractions are strong, low or medium forceps will have to be done.

b. Length of the pubes and sub-pubic ligament. This varies from one to three inches. With the long pubes the difficulty in delivery is encountered in the middle and lower part of the pelvic canal, and when accompanied with the condition mentioned above, in which the lower part of the pubes is inclined toward the sacrum, may produce severe dystocia.

c. Thickness of the pubes. This usually occurs in women of stout build and heavy bones. In connection with the thick pubes there may be a cartilaginous ridge over the symphysis as thick as a quarter of an inch. In measuring a pelvis these points must be considered, else an external conjugate measurement might be misleading.

The treatment of the above mentioned conditions, in which engagement of the presenting part is interfered with, should be version as soon as the cervix is sufficiently dilated. If there is delay the membranes rupture, allowing the amniotic fluid to escape, the uterus contracts on the foetus so firmly that version is impossible or dangerous, and a high forceps operation must be performed, which is always dangerous for the child.

Delayed Birth of a Second Twin.

W. E. HARAWAY (*Med. and Surg. Bulletin*, September, 1899) reports a case of a patient whom he delivered of a child after a labor lasting about twelve hours. The uterus was not preceptibly reduced in size, and evidently contained another child. The writer remained with the woman twelve hours longer, but, the pains having subsided, he left with instructions that he should be notified if the pains increased. Two days later, sixty hours after the birth of the first child, a second child was born.

Perinæo-Vaginal Incisions for Threatened Rupture of the Perinæum.

L. A. FEITSCHÉ (*Northwestern Lancet*, Sept. 15, 1899) says that the history of vaginal incisions for threatened rupture of the perinæum,

dates back to Fielding Oulde's "Treatise on Midwifery," published in 1742. Such incisions are indicated:

1. In stenosis of the vagina due to cicatricial contraction following the ulcerative processes of syphilis and infectious diseases, and lacerations from previous parturitions.
2. In rigidity of the muscular structures of the pelvic outlet in old primiparæ.
3. In high forceps or version in primiparæ, where haste is demanded, and the presenting part has not time to dilate the muscular ring of the pelvic outlet.
4. In occipito-posterior positions, when the occiput rotates into the sacral cavity.
5. In narrowing of the pelvic outlet, as in funnel-shaped or kyphotic pelves, and when the transverse diameter is not narrower than 8 cm.

The incisions are made as follows: With an angular scissors or scalpel cut into the introitus on one or both sides, at the beginning or end of a labor pain, in the direction of a point midway between the rectum and the tubera ischii, a little nearer to the latter. The length of the incision into the vagina should be 4 cm., and the depth given by the incision through the skin about 3 cm. The head and shoulders will act as tampons and prevent hæmorrhage. As soon as the child is born bleeding will be arrested by sutures which bring the cut surfaces in apposition. In consequence of the retraction of the muscles the contour of the wounds is changed, and care is necessary to approximate the surfaces properly. If this is not done there may result elongation of the vulva, or an artificial drawing out of the posterior vaginal wall. Iodoform or boric acid is dusted over, and a strip of gauze laid in the vagina and made to cover the outer part of the wound. In some cases the incisions must be deeper, and again, in others a single incision will overcome the obstruction. The scars are very insignificant. Lacerations and sepsis may often be avoided in this way. The patient must be kept on her back for twelve or fourteen days.

Toxicity of Urine in Pregnancy.

ROBERT W. STEWART (*Cincinnati Lancet-Clinic*, Sept. 23, 1899) says that the experiments of Bouchard seemed to show that the urine of healthy human beings, when injected into the blood through the post-auricular veins, was poisonous to rabbits. Chambrelent and Demont showed by similar methods that the urine of women in the last month of pregnancy was less poisonous than that of non-pregnant women.

uterus, and partially or entirely covers the os. It occurs eight times as frequently in multiparæ as in primiparæ, and is more frequent in hard-working women. The bleeding which takes place from the torn and lacerated uterine vessels constitutes the source of danger, as the hæmorrhage is usually profuse and sudden. This rarely occurs until after the sixth month of pregnancy. The blood may have either a venous or arterial hue and coagulates quickly. The flow may cease as suddenly as it began, to return again after a longer or shorter interval. Lusk maintains that labor should be induced at the occurrence of the first hæmorrhage, as delay in the interests of the child too often sacrifices both lives. In case the seventh month has not been attained, delay should be counseled only when the patient has the constant care of a trained medical attendant. Opium does more harm than good, as it diminishes uterine contractions. Ergot is fatal to the child and dangerous for the mother. Cold or astringent injections are not sufficiently powerful. If the cervix is closed, disinfect the vagina, and thoroughly tampon to excite uterine contractions. In from eight to twenty-four hours the cervix will usually be dilated enough to admit of two fingers. Version should be performed by the Braxton-Hicks method, and an extremity of the child brought down into the vagina. Slight traction on this will induce pains and prevent further hæmorrhage. Nature will usually complete the delivery. The writer reports five cases of placenta prævia, occurring in his own practice, in which the mothers all recovered, but only one child survived. Two of these women were primiparæ, and two of the instances were in successive pregnancies in the same woman.

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1. Obliquity of plane of superior strait of pelvis to axis of the body. Other things being equal, a child can be more easily delivered through a pelvis in which the plane of the superior strait approaches more nearly a right angle to the axis of the body. The propelling force strikes the plane of the superior strait at an oblique angle, and consequently is not nearly so effective, while the foetal head is driven against the pubes. The line joining the spine of the fourth lumbar vertebra and the superior margin of the pubes practically lies in the superior plane of the pelvis, and all that is necessary to find the variation of this plane is to get the angle this line makes with the axis of the body. The writer has found this angle to vary from 45 to 66 degrees.

2. Lordosis of lumbar vertebræ, and more particularly the undue prominence of the last lumbar vertebra.

The variation in the anterior curve of the lumbar spine is remarkable. Sometimes, instead of all the lumbar vertebræ participating in the curve, some one or two become unduly prominent; these are apt to be the fifth or the fourth and fifth lumbar, and are marked factors in producing dystocia. In this condition there is not only shortening of the true conjugate, but an interference of the foetal presenting part in engaging the superior strait, since the foetus is forced anteriorly and impinges against the pubes. Thus, by the laws of mechanics, we find the propelling force divided, and the effective element varying with the curvature and the angle of impaction. With this condition of the lumbar vertebræ there is more or less rotation of the pelvis on its transverse axis. Spondylolisthesis, which is exceedingly rare, is probably brought about by an exaggerated prominence of the fifth lumbar vertebra, reaching the stage where the ligaments failing to do their duty, the vertebra slips down and anterior to the sacrum.

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cavity, which filled in with granulations and was completely healed in eight weeks. At the present time, six months later, the breast is soft and movable, showing only a linear scar and a moderate loss of breast substance.

Case II. presented a large acinous carcinoma throughout the substance of the breast, with pain and retraction of the nipple, but without involvement of the axillary glands. A local circuit was instituted by means of a ring of zinc-mercury electrodes inserted about the periphery of the growth, each pointing towards the center of the growth and all connected with the positive pole of the battery, while a cotton-covered disc saturated with arsenite of potassium was placed upon the center of the tumor to act as a negative pole. Eight hundred milliamperes were thus employed and after the whole tumor had been devitalized and softened, the negative cord was shifted to a large pad beneath the patient, and a zone of infiltration produced from the zinc electrodes alone with a current of four hundred milliamperes. On the twenty-second day the entire breast came away leaving an apparently healthy cavity, which is now greatly reduced and seems to be filled with normal tissue.

Case III. presented, besides the carcinoma an enlarged axillary gland, which, after the destruction of the tumor as in Case I., was treated with a current of four hundred milliamperes through the zinc-mercury electrode. The dead tissue in both places has come away and both wounds healed with every appearance of health.

Case IV. was a recurrent carcinoma of the subcutaneous tissues, the breast having been removed for carcinoma two years ago; the result of the method has been thus far satisfactory, the necrosis being limited to the area of apparent disease, while the extensive surrounding infiltration promises the destruction of any malignant germs in the neighborhood.

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A NEW METHOD OF DIAGNOSIS OF TUBERCULOSIS OF
THE KIDNEY.

BY CHARLES P. NOBLE, M.D.,

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AND

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The diagnosis of tuberculosis of the kidney has been considered sufficiently obscure to cause the average physician to be very doubtful of his abilities in this direction. It has been my experience as a practical surgeon that the cases which have come under my notice have all been so far advanced that the ordinary methods of diagnosis were sufficient for arriving at a conclusion. In all of the cases pain, tumor, hectic fever, pyuria and bladder symptoms have been present to so marked a degree that but little skill has been required to make a diagnosis.

The case reported to-night is of the same character. It is reported in detail, however, because of the employment of a method of diagnosis which has been recommended for cases obscure in character or when seen at an early stage. This consists in securing urine by catheterization of the ureters with sterile catheters, and then injecting the sediment from the urine into guinea pigs. The urine obtained from a tubercular kidney and containing tubercle bacilli will infect guinea pigs, whereas, that free from tubercle bacilli will not. The result of this examination in the particular case reported will be detailed by Dr. Babcock.

While not needed for diagnosis in this case, the result corroborates the claims of Dr. Reynolds of Boston concerning the value of the method, and I shall certainly employ it in future cases in which there is doubt. Tuberculosis of the kidney is not a rare disease, and any method which will add to the certainty of diagnosis of the malady is deserving of our attention. The present tendency is to permit these cases to go on until the patients are in bad general condition, or *in extremis*, before they are brought to the surgeon. It is to stimulate an interest in the subject and to permit the early diagnosis of the malady that this contribution has been made.

Miss E. B., white, aged thirty. There is no history of tuberculosis in her family. Her father died at 53, with heart, liver and kidney disease. The mother is living and well, as are all of the patient's brothers and sisters.

The personal history reveals no ailments except those common to childhood. The patient was admitted to the Kensington Hospital for Women May 23, 1899, having at that time suffered for four months with frequent and painful micturition that had progressively increased in severity. At times there had been right lumbar pain extending to the thigh. The urine at this time was acid, with a specific gravity of 1012, and contained albumin and a very considerable amount of pus.

With the cystoscope the bladder was found to be inflamed, with several small ulcers near the right urethral orifice. This was very patulous, being at least four times the normal diameter. Despite repeated examinations, the left urethral orifice was not found. Under bladder irrigations the vesical symptoms subsided, but the pyuria persisted, until, after nine weeks, the pus formed from one-eighth to one-fifth, by bulk, of the urine. The average quantity passed at this time during twenty-four hours measured forty-eight ounces.

The course of the fever during the first month under hospital observation was irregular, but the evening rise rarely exceeded 100° F. Then the fever became more marked, with an evening exacerbation that averaged during the fourth, fifth and sixth weeks 101° F., and that increased during the next three weeks to 102° F., and frequently reached 103° and 104° F.

During this time the patient lost weight and strength, and had repeated attacks of abdominal pain, particularly in the right renal region.

Urethral catheterization continued unsatisfactory, as only the right ureter could be catheterized. The urine collected from this ureter was always alkaline, and contained much pus and had a specific gravity as low as 1006.

About the eighth week a large mass became palpable on the right side of the abdomen. A number of microscopical examinations failed to show tubercle bacilli in the urine. It was, therefore, determined to inject the urinary sediment from each kidney into separate guinea pigs. A urethral catheter was accordingly introduced into the right ureter, June 6, 1899, and in sixty minutes about one ounce of purulent urine had collected from this kidney. As it was not possible to catheterize the left ureter, the bladder was irrigated with salt solution. The urine collecting in it from the left ureter was saved. After twenty minutes one and one-half ounces were drawn—which doubtless contained a considerable percentage of salt solution. The separate urines were placed in sterile tubes, sealed with cotton stoppers, centrifuged, and placed upon ice. Three guinea pigs, having an average weight of about 500 gms., were taken. About 1.5 cc. of the separate sediments were injected into the abdominal walls of two of the pigs, June 6, 1899. The third animal was not injected, and served as a control. Considerable local reaction, with redness, tenderness and decided swelling occurred at the seats of inoculation and slowly subsided.

The patient's right kidney having in the meantime been removed and found to be extremely disorganized by a tubercular process, the guinea pigs were permitted to live much longer than is usually necessary. Upon September 18 the guinea pig that was injected with urine from the left kidney, having been distinctly ill for some time, was killed. There was an open wound at the seat of inoculation, surrounded by a moderate fibroid induration. The inguinal lymphatics were much enlarged and distended with a thick cheesy material. The cervical, axillary and mediastinal glands were also involved, and there were marked and typical tubercular deposits in the spleen, lungs and liver. Stained preparations from the necrotic foci showed the tubercle bacilli. Upon September 22, the second pig (the one injected with the urine from the right kidney) was killed. This animal, although apparently not in health, did not appear so ill as did the first. A small, granulating wound was present at the seat of the inoculation. The inguinal glands were not enlarged (the injection having been made rather high over the lower thorax), but the axillary and cervical glands were enlarged. Necrotic collections were found in the anterior mediastinal glands, which showed, upon staining, the characteristic bacilli. Tubercles were present in the spleen, and there were also small tubercles in the lungs and liver. The entire process, however, was milder than that occurring in the first pig. The control guinea pig has gained in weight

and remains healthy. The guinea pig forms such a delicate reacting medium to the tubercle bacillus that it is not improbable that the tuberculosis of the second pig was produced by bacilli entering the bladder through the right ureter. In using a test of such delicacy it is obvious that the urine from each kidney should be secured whenever possible directly from the ureter or renal pelvis.

The patient's condition becoming such that it was deemed unwise to await the result of the inoculations, upon July 24 a right nephrectomy was performed.

A large suppurating tubercular kidney was removed through a lumbar incision. There were two ureters, one of which was much infiltrated and its lumen filled with pus. The incision was not extended forward in order to perform a complete ureterectomy, because of the general condition of the patient. Gauze drainage was employed because of the diseased condition of the ureteral stump.

The quantity of urine passed during the first twenty-four hours after operation was fourteen ounces. It contained considerable albumen and much pus. During the second twenty-four hours, twenty-three ounces was passed. Gradually the quantity increased until the average daily excretion became from forty to sixty ounces.

The wound suppurated and pus was discharged. On the tenth day after the operation the patient's appetite returned, and her strength increased. All her pain disappeared and she was discharged in good general condition (but with a sinus) at the end of seven weeks. At the present time the sinus is open, discharges some pus and considerable urine. This evidently is discharged from the bladder, regurgitating through the very patulous ureter. The kidney increased 15 cm. in length and 6.5 cm. in breadth. The capsule was thickened and adherent, and the renal surface was lobulated. On section the bulk of its substance was found to be replaced by a reddish or yellowish cheesy material. But a single pole retained the appearance of normal kidney structure, and even this was infiltrated with small tubercles.

Under the microscope the gross appearances were confirmed. Much of the renal substance consisted of a granular necrotic debris unrecognizable as the kidney. In those portions of the sections that had not had their original structure completely obliterated, many tubercles in early or more advanced stages of development were found. Even sections from the single pole of the kidney in portions where no lesions were noticed revealed under the microscope numerous beginning infiltrations.

No more delicate or reliable method of determining the presence

of living tubercle bacilli has yet been discovered than that dependent upon the injection of susceptible animals. Fluids containing tubercle bacilli in numbers so small that they cannot be found by staining methods readily induce tubercular lesions when injected into proper animals. The chief objection to this method is the time required. When the injection is made subcutaneously or even intraperitoneally, a delay of from four to six weeks is usually necessary. A somewhat shorter time may suffice when the material is injected into the anterior chamber of a rabbit's eye. In using the method for the diagnosis of early renal tuberculosis it is very obvious that all sources of contamination should be avoided. One could scarcely be assured of the absence of infection from an imperfectly cleansed or a diseased bladder in using the Harris instrument, and while much less probable, contamination is possible, even when using the urethral catheter.

While the method by injecting urinary sediment requires time and skill sufficient to use the urethral catheter; if we may judge by the results from the few cases that have been reported, it is the most reliable single procedure yet devised—and pending the development of a better method it seems to deserve a much more extended trial than it has yet received.

THE ANATOMY AND PHYSIOLOGY OF THE VISCERAL SYMPATHETIC, AND ITS BEARINGS ON PELVIC, ABDOMINAL AND MENTAL TROUBLES.*

By E. K. BACON, M.D.,

Lecturer in Surgical Anatomy, Mich. Col. of Med. and Surg.

Mr. President and Members of the Wayne County Medical Society: It is with diffidence that I address you this evening on a subject around which is yet so much darkness; about which I profess all ignorance. Many things have been brought to notice within the past years, concerning diseases and disorders of organs remote from the main source of irritation, making the study of this important system of nerves one of interest and delight, and if I can unlock some portion of your memories, in which dwell knowledge of affected organs under this head, which in the discussion of this paper will bring new light or more satisfactory explanations, I will consider the time devoted in research and study well applied.

Anatomy and physiology had their birth long after surgery, medicine, practice and the special arts of our profession had received a vigorous growth, and to look into the past for early thoughts on the sympathetic system, will, I hope, awaken in your breasts forbearance, for I well know most of us think it time wasted, "for as fleet do the works of man sink forgotten in its past again, that we hold ancient things faded as a dream."

Medical and surgical practice had its birth among the Egyptians and Assyrians, whose law forbade dissecting, and we find but crude ideas among them concerning the structure of bodies. With Chiron began a dawn. But a very faint light pierced the darkness of ignorance. His adopted son, Æsculapius, whose birthplace was the hills of Greece, nourished for many months by the shepherds following their flocks, dispelled the denseness of the cloud and placed the mysticism of the past on a basis from which we are erecting and perfecting the art of medicine. Æsculapius followed the footsteps of Chiron. It is said he dissected some of the lower animals. At his death the Grecians erected temples to his memory, to which thousands went for treatment. At these temples many students received learning, but none of them became famous until at the temple of Cos, nearly four hundred

* Read before the Wayne County Medical Society.

years before our era, Hippocrates kindled a flame whose reflected rays shed a lustre that dispelled much of the existing gloom, and whose flickering lights leave their shadows even to the present day. Hippocrates crudely dissected a human body. He knew but little of the anatomy, but comprehended much of the physiology of a sympathetic system. Celsus dissected and knew of solar and cervical plexuses and ganglions. Galen perfected the dissection of Hippocrates, but his dissections were imperfect. He knew of a sympathetic system. Paulus in his work on midwifery, comprehended the sympathetic existing between the pelvic and abdominal viscera, and knew of a solar plexus. Mondini of the fifteenth century dissected the cervical, solar, dorsal and lumbar ganglia, but his dissections were very crude and his dissertation on anatomy shrouded in the mysticisms of his day. Vasalius, in the sixteenth century, threw off the yoke of superstition that fettered his contemporaries and, although persecuted, began his brilliant career in anatomy and surgery. He dissected thoroughly the sympathetic system, working out cranial, cervical, dorsal, lumbar and sacral ganglia; traced their connections to brain and spinal cord. He worked out the solar, semilunar and other abdominal plexuses, and his works, even to-day, are masterpieces. He spent years in perfecting a subject most important, only to die an exile in poverty on the unfriendly coast of a foreign shore. Sylvius, the dissector of brain and nerves, demonstrated the sympathetic system and named the fissures and canal that bears his name. Willis discovered ganglia unknown to Vasalius and perfected the Spaniard's works. Fallopius, in the sixteenth century, discovered some of the ganglia and plexus that supply the uterus and its appendages. Varoleus left complete tomes and drawings of brain, spinal and sympathetic nerves. Casserius discovered nerves and ganglia unknown to his predecessors, Albinus and Vienssens perfected the works of Vasalius and Varoleus. Gall and Springheim left works on these nerves that are classical. Haller, while roaming the hills of the Alps, in his studies of botany, began his contemplations upon the anatomical works of the former masters, and established the first work on physiology. The work of John Hunter on this important section of anatomy, we are all acquainted with. His famous students, Astley Cooper and his brother Samuel, Dorsey and Phillip Sing Physic, elaborated the works of their teacher, became in turn the tutors of John and Charles Bell, Willis, Joseph Pancoast, Samuel Jackson of Philadelphia, Samuel D. Gross, all of them masters of anatomy. Their researches in the anatomy of the sympathetic and its physiology may be found in many works devoted

to nervous diseases. With Charles Bell the ancient works of the old anatomists were blended with his observations, and in his work issued in 1817 he describes the sympathetic nervous system as a system unique by itself, but having a direct connection with brain and spinal cord. He describes the system of which we speak to-night as being formed from the lower cervical ganglion, which is irregular in shape, sending branches which unite with others from the ganglion of the par vagum, branches from the recurrent, cardiac and pulmonary plexuses, forming a plexus which encircles the vertebral artery near its root. This plexus runs along the subclavian artery, terminating in the superior thoracic ganglion. It is the largest of the thoracic ganglia composed of the nerve filaments from the third and often fourth cervical nerves. Frequently branches from the first dorsal nerves send filaments to this ganglion. It is oval or triangular in shape, and sends branches into the canal which receives the vertebral artery. The cardiac and pulmonary plexuses, which supply the heart and posterior surface of the lungs, receive filaments from this ganglion. There is a chain of sympathetic nerves running along the backbone that is formed by the amplification of dorsal and lumbar nerves. This chain is connected together by filaments passing down from one ganglion to the other. The sympathetic ganglia of the thorax receive not only filaments from this chain of ganglion, but from the dorsal or intercostal nerves. While lying on the sides of the vertebræ, this ganglion sends forward upon the body of the vertebræ a branch which passes into the abdomen between the crura of the diaphragm, while the trunk of the sympathetic continues its course by the heads of the ribs, under the ligamentum arcuatum, and thence downwards upon the lumbar vertebræ.

The great splanchnic nerve is this anterior branch of the sympathetic in the thorax and abdomen. It is the great nerve of the abdominal viscera. It generally has three or four roots from the sympathetic trunk, opposite the sixth, seventh and eighth intercostal nerves. Under the plura costalis it is found passing obliquely over the bodies of the lumbar vertebræ from the sixth to the tenth. It then passes between the cruræ of the diaphragm into the cavity of the abdomen forming the semi-lunar ganglion. Filaments from ganglia found opposite the interspaces between the ninth, tenth and eleventh ribs join the semi-lunar ganglion after passing through the diaphragm. But there is considerable variety observed in the origin of the splanchnic and the number of its branches. A large branch going off from the sympathetic to the semilunar ganglion, between the tenth and eleventh ribs,

is commonly found and received the name of splanchnic minor or accessorius. This nerve frequently terminates in the renal plexus, and often sends branches to both. This ganglion has no regular shape, and least of all when separated from the body. It is formed by the splanchnic and branches from the lumbar spinal nerves, which unite and amplify themselves into a ganglion. We find it surrounding the cœliac axis, an arterial branch of the aorta, and old Albinus called it the cœliac ganglion. It consists, on close examination, of small ganglionic masses, sometimes to the number of twelve, matted together in a glandular shape. These masses interlace and weave a network of nerves around the roots and branches of arteries springing from the cœliac axis; following these arteries, branches from the semilunar plexus extend themselves into the substance of the liver, stomach and spleen. The semilunar ganglion, with its network of branches, compose the great solar plexus, branches of which supply the higher viscera of the abdomen. Branches of the pneumogastric nerve come down from the stomach and unite with the solar plexus. The phrenic send twigs to this plexus, the pneumogastric and splanchnic nerves. Branches from the superior lumbar nerves, coming from the seat of the kidneys, interlace with the solar plexus. In pursuing the study of the nerves of the viscera more closely, we are unable to follow individual branches, but rather mark the course and enumerate the various sources of the plexus and network of nerves which follow the great vessels. From the semilunar plexuses, nerves pass out, following the course of the phrenic artery, upon the lower surface of the diaphragm. Two masses of interlacing nerve fibres, the one following the vena porta, biliary ducts and right hepatic arteries, whose terminal filaments form a vast network, whose branches penetrate the right side of the liver, where the artery enters the substance, splits up into many branches, receiving the name of the right hepatic plexus. Filaments from this plexus form ganglia around the gall-duct.

The other mass of nerves pass along the left hepatic artery, interlace with filaments from the cardiac nerves, and branches from the pneumogastric, forming the left hepatic plexus. In its course it runs upon the lesser curvature of the stomach, where it freely unites with branches of the pneumogastric. From the right hepatic plexus many branches of nerves are sent to the lower surface of the stomach and duodenum. From the semilunar plexus many filaments form networks around the splenic artery. From the splenic plexus nerves pass to the great omentum, attaching themselves to the right epiploic artery, following the great curvature of the stomach.

Again we see branches in abundance following the pancreatic arteries, branches of the splenic, to the pancreas. The solar plexus, continuing downward upon the aorta, involves the roots of the superior mesenteric artery, join here with branches of spinal nerves from the loins and lumbar regions, interlace and form the superior mesenteric plexus. This plexus spreads between the layers of the mesentery, extend upon the branches of the artery. It consequently supplies the mesenteric glands, sending nerves to the pancreas, whose filaments anastomose with those of the splenic plexus.

The same mesh of nerves continues still further down upon the aorta, surround the lower mesenteric artery and follow its branches, forming the meso-colic plexus. This plexus is formed also by many branches of the great spinal sympathetic. As this plexus spreads upon the branches of the lower mesenteric artery, it passes to the left side of the colon and rectum. Following the lower part of the inferior mesenteric plexus is the hypo-gastric plexus.

Before describing the other plexus of nerves we will follow out the continued trunk of the sympathetic, which has been described as following closely the lateral part of the dorsal and lumbar vertebræ, while the splanchnic nerves pass obliquely over them to the viscera of the upper part of the belly.

The trunk of the sympathetic nerves, after it has given off the splanchnic in the thorax, sends several small nerves forward over the vertebræ to the mediastinum and sheath of the aorta, then passes the diaphragm by the way of the crura, keeping close to the transverse processes of the vertebræ. When, however, it comes lower upon the lumbar vertebræ, it lies more upon the sides of the bodies, and its connections with the lumbar nerves are by small and numerous twigs to the several plexuses which have been described. Where it lies under the vessels which pass to the kidneys, it sends up some branches to the renal plexus.

The renal plexus is not entirely formed by the branches of the continued sympathetic, but also from the continuation of the cœliac and superior mesenteric plexuses, while the lesser splanchnic nerve which was sent off in the thorax also terminates in it. This plexus is thrown over the vessels of the kidneys and forms several small ganglia.

From the renal plexus descends the spermatic plexus, accompanying the vessels to the testicles. This plexus in the female follows the vessels in their distribution to the ovary and portion of the uterus.

In passing down the loins, the sympathetic forms five or six ganglia with the branches from the lumbar nerves. These are oblong, an-

gular, stellated and irregular in their form as well as number, situation and size, or the twigs which by their union with the sympathetic form them.

Between these ganglia or connections with the lumbar nerves, the sympathetic is not always one nerve, but is sometimes split into several small ones, which unite again. From the sympathetic nerves of both sides we have to observe frequently interchange of branches, which sometimes attach themselves to the lumbar nerves, sometimes creep under the aorta, or unite to the plexus covering the face of the aorta.

There are several little ganglia formed by these nerves upon the face of the lumbar vertebræ. They were called by the old anatomists Ganglia Accessoria. Before the sympathetic nerve descends into the pelvis, it has become extremely delicate. In many subjects it seems to terminate in the last lumbar, or first sacral nerve, but upon more minute dissection lesser branches will be found to descend among the loose cellular substance of the pelvis. When fully dissected the sympathetic nerves of each side are seen to descend upon the fore part of the sacrum, and form connections with the sacral nerves similar to those with the dorsal nerves. As they descend they approach and finally unite in an acute point on the os coccygis. At the points of union of these extreme branches of the sympathetic nerves with the branches of the sacral nerves small ganglia are formed, and these pass out branches which cover the intermediate surface of the sacrum with an extensive plexus. The ganglia formed by the union of the two sympathetic nerves at the point of the coccyx is called the coccygeal ganglion, and from it pass three or four nerves to the extremity of the rectum. Branches of the coccygeal plexus, with branches from the inferior mesenteric plexus, pass down on the side of the pelvis and involve the hypogastric artery, which receives the name of the hypogastric plexus. But we find this plexus formed mostly by continuous branches downward from the extreme part of the spermatic plexus, the sacral nerves, particularly the third sacral, and branches from the accessory ganglia on the sacrum.

Willis, in his anatomy, differs but little from Charles Bell. He is not as concise, and makes no new discoveries. William E. Homer, in his descriptive anatomy and histology, printed in 1843, describes this system of nerves as having twelve thoracic ganglia placed on or near the heads of the ribs at the commencement of the intercostal spaces, covered by the pleura-costalis. They are irregular in shape and of different sizes, much smaller than the cervical ganglia. The cord of the sympathetic is continued successively from one ganglion to the other,

forming a complete chain in these connections. From each ganglion there proceeds one or more external branches, which go outward to anastomose with the intercostal nerve of the corresponding parts. Each ganglion also detaches one or more internal branches of filaments to the adjacent parts lying on the vertebral columns; some go to the cellular substance, others to the longus colli muscle, others to the aorta, others to the celiac and pulmonary plexuses. Among the internal branches there are several which occur to form the splanchnic nerves, which are two in number, the greater and the lesser.

The great splanchnic nerve arises by filaments from the sixth to the ninth thoracic ganglia, inclusively; one or more filaments coming from each ganglion. They are directed downward on the sides of the dorsal vertebræ, covered by the pleura, and unite into a trunk about the eleventh dorsal vertebræ. This trunk penetrates into the cavity of the abdomen, between the middle and internal part of the diaphragm, or by the opening for the aorta. Having got into the abdomen, the great splanchnic divides into several fasciculi, which, diverging, are concealed on the right side by the liver and on the left by the stomach. On each side of the aorta is a large ganglion formed by an assemblage of several smaller ones, the semilunar ganglion. In it terminate these fasciculi, some of which, however, go immediately into the solar plexus, which emanates from the semilunar ganglion.

The small splanchnic nerve is derived from the tenth and eleventh thoracic ganglia. Having united, they penetrate the crus of the diaphragm, and, reaching the abdomen, the trunk is divided into two branches, of which the uppermost ascends to join the great splanchnic before its division, and the lower descends to join the renal plexus. The renal plexus, or, as Walters called it, the posterior renal nerve, is formed by branches from the eleventh and twelfth thoracic ganglia, and from the communicating branch between the last thoracic and the first lumbar ganglia. They unite, forming a trunk which goes to form the renal plexus. The semilunar ganglion, situated on the side of the aorta, is somewhat semicircular or oval, and is about an inch long; its form, however, is diversified in different subjects. The several ganglia of which it is composed are frequently fused into a single one. That of the right side is more voluminous, and is placed between the ascending vena cava and crus of the diaphragm, somewhat above the left renal arteries. That of the left is situated on the left of the crus of the diaphragm, somewhat below the splenic artery. Between their inferior extremities, there are generally two or three smaller ganglia. These several ganglia are united by numerous filaments, which send out

many ramifications and anastomose freely with each other. The preceding arrangements may be considered as the root of the solar plexus, which extends from the cœliac artery to the lower margin of the emulgents, and it is common to the ganglia of the two sides. It is an inch and a half to two inches wide. Bichat remarked that this plexus seemed to exist for the aorta, as all the divisions which it sends out follow exactly the branches of this artery, that we adopt the latter as a basis of the description. The number of branches emanating from the solar plexus are so complicated that a description of individual branches would be almost endless. Anatomists are therefore generally agreed to describe the plexus according to the order of the arteries which its detachments adhere to and surround.

From the superior part of the solar plexus a few filaments are sent out, forming the diaphragmatic plexus, which follows the course of the phrenic arteries. Some of them anastomose with the terminating branches of the phrenic nerve, in the thickness of the diaphragm.

The cœliac plexus of nerves formed by the fibres from the splanchnic and lumbar nerves, surround that artery and are divided into three parts, following the three arteries, which spring from the axis. The superior coronary plexus is the smallest of the three, and belongs to the stomach. It attends the gastric artery along the lesser curvature of the stomach to the pylorus, supplying the stomach continually with fine filaments. In its course it unites with many filaments from the par vagum and sends filaments to the hepatic plexus. The hepatic plexus is the largest of the three. It surrounds the hepatic arteries and vena portarum, and in its course sends branches with the gastric-epiploic artery to the great curvature of the stomach, constituting the inferior coronary plexus. Branches are also sent to the pancreas and duodenum. The hepatic plexus then enters the transverse fissure of the liver, where its branches may be traced to the several lobes, to the gall bladder and their ducts.

The splenic plexus is small and surrounds the splenic artery. The few branches of which it is composed anastomose but rarely with one another. Some of them go to the pancreas and its ducts along with the pancreatic branches of the splenic artery; others go with the left epiploic artery to the left extremity and the greater curvature of the stomach; the remainder penetrates into the substance of the spleen through its fissure, along with the branches of the splenic artery.

The solar plexus again sends off other nerve fibres, near the root of the superior mesenteric artery, forming the superior mesenteric plexus. It descends some short distance on the aorta before it reaches

the substance of the latter. It passes with the artery between the pancreas and duodenum, and is then included between the layers of the mesentery. Thence it is distributed by very numerous filaments along with the branches of the superior mesenteric artery to the whole of the small intestines, to the cæcum and to the ascending and transverse colon. The latter part of the solar plexus and a branch from the posterior renal nerve of Walter send branches to form the renal plexus; often a branch is sent to this plexus from the lesser splanchnic plexus. The branches which form this plexus do not anastomose much, until they get near the kidney; they then penetrate into its substance through the fissure. Some filaments from this plexus go to the capsule renalis; others follow the course of the spermatic artery, constitute the spermatic plexus, which goes to the testicles in the male and the ovaries in the female. The solar plexus continues downward on the anterior face of the aorta to the root of the inferior mesenteric artery, which it surrounds, forming the inferior mesenteric plexus. It is much smaller than the superior mesenteric plexus, though it receives continually in its descent filaments from the lumbar ganglion of the chain of sympathetic. It forms frequent anastomoses around the root of the inferior mesenteric artery, and near the superior strait of the pelvis is resolved into two columns of fibres. One column is distributed along with the artery to the rectum, to the sigmoid flexure and to the descending colon, thereby anastomosing with the colonic branches of the superior mesenteric plexus. The other column descends into the pelvis, in front of the sacrum and contributes to form the hypogastric plexus, but several of its branches follow the external and internal iliac arteries.

The twelfth thoracic ganglion unites with the first lumbar by a small branch, which may be considered as the continuation of the sympathetic, and form the lumbar ganglia, which are five in number, situated on either side, and are placed anteriorly on the side of the bodies of the lumbar vertebræ near the anterior margin of the psoas magnus muscle. Their forms are irregular; they are smaller than the cervical ganglia, but larger than the dorsal. They are inconstant in their number, being sometimes less than five, but never more. They also vary in their situation.

Each ganglion sends out one or more external branches, which, applying themselves to the body of the contiguous vertebræ, reach the intervertebral foramen of the loins, and join with the anterior branch of the corresponding lumbar nerve. Some of these fibres are spent on the quadratus lumborum muscle. Each lumbar ganglion, or the immediate chord of the sympathetic, also detaches branches internally,

which are very small and more or less interwoven with each other. These branches get to the abdominal aorta, and joining the inferior mesenteric plexus are distributed along with the aorta and its branches. Frequently there is no chord sent directly from the lower lumbar ganglion to the sacral ganglion, but we find the sacral ganglion consisting of these bodies, sometimes four or five in number. They are situated in a line on the anterior face of the sacrum, near the corresponding foramina for the transverse sacral nerves, and are united to each other by intermediate fibres, from one to three in number, which are continuation of the sympathetic nerves. Bichat asserted that frequently the first of these ganglia is not united to the last of the lumbar by an intermediate nerve, so that thus the continuity of the sympathetic is interrupted. Each ganglion sends off externally one or more filaments by which it is united to the corresponding sacral nerves. It also detaches filaments in this direction to the pyreiformis and levator ani muscles. Each ganglion also detaches from its internal margin ramifications, which go obliquely downward on the front of the sacrum and anastomose with corresponding filaments from the other side. From these ganglia many branches pass forward to the hypogastric plexus, which is formed by them, by the inferior mesenteric plexus and many filaments from the lower sacral nerves, principally the third. This plexus distributes fibres to the rectum, bladder, vesiculæ seminales, the prostate gland of the male and the vaginal and uterus of the female.

In 1846 Joseph Pancoast's work came out. There were no advances made by this writer than were noted by Horner concerning the minute distribution of these important nerves. In 1852 Wilson's fourth American and last London edition was printed. His description of the sympathetic was more elaborate than his predecessors, but its minute anatomy was not demonstrated. A few years later, Samuel began his successful career upon the minute anatomy of the sympathetic nerves of the stomach. Peyrain demonstrated the distribution of sympathetic nerves to the cells and substance of glands. F. Goltz and Robert Lee dissected out the sympathetic nerves which move the cells of the heart to action. Roy and Adams demonstrated the distribution of the sympathetic nerves to the walls of blood-vessels and abdominal viscera. The anatomy of this important system completed, as far as is discovered brings the inferior cervical ganglion into situation between the base of the transverse process of the last cervical vertebra and the neck of the first rib, on the under side of the intercostal artery. It is large and irregular in shape, sending down a branch to the first thoracic ganglion. The thoracic portion of the gangliated cord

corresponds in number to that of the vertebræ generally, but their number is uncertain. These ganglia are placed on each side of the spine, resting against the heads of the ribs and covered by the pleura costalis. The last two are, however, anterior to the rest, being placed on the sides of the bodies of the vertebræ. The ganglia are small in size and of grayish color, the first being the largest of them all and is of elongated form, usually blending with the last cervical. These ganglia are connected by chord-like projections from their substance. The external branches, usually two in number, connect with each of the dorsal nerves.

The internal branches from the six upper ganglia are very small; they supply filaments to the cells of the thoracic aorta and its branches, besides small branches to the bodies of the vertebræ, their cartilages and ligaments. Branches from the third and fourth ganglia form part of the posterior pulmonary plexus. The internal branches from the six lower ganglia are large and white in color; they distribute filaments to the walls of the aorta, and unite to form the other splanchnic nerves, the great, small, and lesser, or renal splanchnic. The great splanchnic nerve is of white color, firm texture and resembles closely the ganglionic nerves. It is formed by the uniting of branches from the ganglia thoracica, between the sixth and the tenth, receiving filaments from all the thoracic ganglia above the sixth. These roots unite to form a cord of considerable size, round in shape. It descends obliquely inward in front of the vertebræ, along the posterior mediastinum, perforates the crus of the diaphragm, terminating in the semi-lunar ganglion, distributing filaments to the renal and supra-renal plexuses.

The lesser splanchnic nerve is formed by filaments from the tenth and eleventh ganglia, and from the cord between them. It pierces the diaphragm with the great splanchnic, and joins the coeliac plexus, communicating in the chest with the great splanchnic, and occasionally sends filaments to the renal plexus. The smallest, or renal splanchnic nerve, arises from the last ganglia, and, piercing the diaphragm, terminates in the renal plexus and lower part of the coeliac plexus. It occasionally communicates with the preceding nerve. Along the inner side of the psoas muscle, in front of the lumbar vertebræ, are found four ganglia, connected by interganglionic cords. These ganglia are of grayish color, shaped like barleycorn, and lie near the median line. The superior branches, white in color, connect the lumbar ganglia with the thoracic, and the inferior branches carry on the nerve forces below. The external branches communicate with the lumbar spinal nerves.

They are usually two in number from each ganglion and accompany the lumbar arteries, whose cell walls are supplied with filaments from these ganglia. Around the sides of the bodies of the vertebræ, passing beneath the fibrous arches from which the fibres of the psoas muscle arises, the internal branches pass inward in front of the aorta and form the aortic plexus. Other branches descend in front of the common iliac arteries and join over the promontory of the sacrum to form the hypogastric plexus. Numerous delicate filaments are also distributed to the bodies of the vertebræ and the ligaments connecting them.

Along the sacrum and the inner side of the anterior sacral foramina, consisting of four or five small ganglia, connected by interganglionic cords, are found the sacral sympathetic portions. Below, these cords converge and unite on the front of the coccyx by means of a small ganglion, called the ganglion impar or coccygeal ganglion. Its superior branches connect the lower ganglion of the lumbar with the sacral sympathetic, while the inferior branch carries the communication below to the lower ganglion. The external branches, which are very short, communicate with the sacral nerves. They are two in number from each ganglion. The coccygeal nerve unites with either the last sacral or coccygeal ganglion.

Hence we see that the great sympathetic is the anastomosing of the spinal nerves and ganglia situated as above described, that throws out branches which become amplified into ganglionic centers, from which come nerves of sensation, motion and nutrition, supplying the viscera of the thorax, abdomen and pelvis.

In the thorax we have the superficial and deep ganglia. The superficial one lying in the concavity of the arch of the aorta, and the deep part lying between the trachia and aorta. From the cervical ganglia of the sympathetic, the cardiac branches of the recurrent laryngeal and pneumogastric branches are sent which connect together into a plexus called by Scarpa the plexus magnus profundus, or deep cardiac plexus. It is situated in front of the trachea at its bifurcation, above the division of the pulmonary artery, and behind the arch of the aorta. The only branches which do not enter into this plexus are the left superior cardiac nerve and the left cervical branch from the pneumogastric. The branches sent out from this great cardiac plexus form the posterior coronary plexus and part of the anterior coronary plexus, while a few filaments proceed to the pulmonary plexus and to the cells of the walls of the auricles of the heart.

The branches which pass from the right side of this plexus pass

some in front of and others behind the right pulmonary artery; the former, more numerous than the latter, transmit a few filaments to the anterior pulmonary plexus, and are continued along the trunk of the pulmonary artery, distributing a few filaments to the cells of the walls of the right auricle and form part of the posterior coronary plexus. The branches from the left side of the deep cardiac plexus distribute a few filaments to the left auricle of the heart and the anterior pulmonary plexus, and then pass on to form the greater part of the posterior coronary plexus, a few branches passing to the superficial cardiac plexus. The anterior cardiac plexus is formed by branches from the left superior cardiac nerve, the left and sometimes the right inferior cervical cardiac branches of the pneumogastric and filaments from the deep cardiac plexus. The cardiac ganglion of Wrisberg is occasionally found connected with these nerves at their point of junction. This ganglion, when found, is situated immediately beneath the arch of the aorta on the right side of the ductus arteriosus.

The superficial cardiac plexus forms the chief part of the anterior coronary plexus, and several filaments pass along the pulmonary artery to the left anterior pulmonary plexus. The posterior coronary plexus is formed by filaments prolonged from the left side of the deep cardiac plexus, and by a few from the right side. It surrounds the branches of the coronary artery at the back of the heart, and its filaments are distributed with the vessels to the cells of the muscular substance of the ventricles.

The anterior coronary plexus is formed chiefly from the superficial cardiac plexus, between the aorta and pulmonary artery; it accompanies the left coronary artery on the anterior surface of the heart. The elaborate dissection of Dr. Robert Lee has demonstrated dense meshes of nerves distributed to the surface and substance of the heart, having many ganglia developed upon them. Filaments of nerves from the great splanchnic nerves of both sides and some from the pneumogastric of the right side unite, amplifying themselves into a ganglion and network of nerves, situated behind the stomach, in front of the aorta and crura of the diaphragm, surrounding the celiac axis and root of the superior mesenteric artery, extending downward as low as the pancreas and outward to the suprarenal capsules, called the solar plexus. It sends filaments, which arrange themselves into plexuses, with all the branches which spring from the anterior part of the abdominal aorta.

Again, the great splanchnic and branches of the solar plexus send out filaments which become amplified into the semilunar ganglia, of which there are two in number. They are the largest ganglia in the

human body, and are formed by the aggregation of smaller ganglia, having spaces between them. They are situated in front of the crura of the diaphragm, close to the suprarenal capsules. The one on the right side lies beneath the inferior vena cava. From the solar plexus seven branches are sent off, which accompany the arteries found coming off from the front part of the abdominal aorta. The phrenic plexus, formed by a branch from the semilunar ganglia and one or two branches from the phrenic nerve, accompanies the phrenic artery to the diaphragm, which it supplies, and often sends filaments to the suprarenal capsules. At the junction of the phrenic nerve and phrenic plexus, on the right side, is a ganglion, small in size, placed on the under surface of the diaphragm near the suprarenal capsules, whose branches supply the right leaf of the diaphragm, the inferior vena cava, suprarenal capsules and the hepatic plexus. There is no ganglion on the left side.

From filaments and branches sent off from the solar and semilunar ganglia, the phrenic and great splanchnic nerves, which join in a plexus around and in the substance of the suprarenal capsules, supplying it, forming a ganglion at the junction of the great splanchnic, and this plexus called the suprarenal plexus, the disturbance of whose function has much to do with Addison's disease.

One thing is of particular interest, that the size of these branches is great as compared to the size of the organ which they supply.

The renal plexus is formed by filaments from the solar plexus, the outer part of the semilunar ganglion, the aortic plexus and filaments from the greater and lesser splanchnic nerves; the nerves from this plexus, fifteen or twenty in number, have numerous ganglia formed upon them. They follow the renal artery and its branches, which they supply with nerve filaments, into the substance of the kidney, supplying it, sending branches to the inferior vena cava and the spermatic plexus on both sides. This is the path traveled by sympathetic testicular pains depending upon disorders of the kidneys. From the renal and aortic plexuses, branches form the spermatic plexus, which accompanies the spermatic vessels to the testes. In the female the spermatic becomes the ovarian plexus, which follows the ovarian vessels into the substance of the ovaries and fundus of the uterus. Recent dissections have found on the posterior surface of the uterus several ganglia which send filaments of nerves into the body of the uterus and cervix, whose terminal branches are lost in the mucous membranes lining that organ. Some filaments of nerves are sent from the ovarian plexus to these ganglia.

Let us now turn to the median space, to that small stump of an artery, curiously arranged, clinging as it does to the abdominal aorta,

from which spring three arteries, one very tortuous, the *coeliac axis*, and then to the *coeliac plexus* which surrounds it. It is formed by the blending and interlacing of the continued solar plexus and branches from the lesser splanchnic nerves. On the left side we find a filament from the pneumogastric blending to form the left part of the plexus. As in other plexuses, which follow arteries in their vicinity, we find the branches from the *coeliac plexus* follow the arteries from the *coeliac axis*.

The gastric or coronary plexus, after receiving a branch from the left pneumogastric nerve, follows the course of the gastric artery along the lesser curvature of the stomach to be distributed to the muscles and mucous membrane of the stomach. We find the hepatic plexus the largest offset of the *coeliac plexus*, receiving filaments from the left pneumogastric and right phrenic nerves, accompanying the hepatic artery and portal vein, ramifying in the substance of the liver, the capsule of Glisson and sending filaments into the muscular substance of the hepatic artery and portal vein. Branches from this plexus follow all the divisions of the hepatic artery. We find a pyloric plexus which follows the course of the pyloric artery, a branch of the hepatic joining with the hepatic plexus and filaments from the pneumogastric nerve, supplying the pyloric end of the stomach and part of the duodenal plexus, which follows the course of that artery, supplying the pancreas and duodenum, joining branches of the mesenteric plexus. We have from the hepatic plexus, a gastro-epiploic plexus, which accompanies the right epiploic artery along the greater curvature of the stomach and anastomoses with branches of the splenic plexus. Last of all, but not least, we have a cystic plexus, which supplies the gall-bladder and ducts. Hence we have a chain of sympathy existing between the ovaries, uterus, kidneys, pancreas, stomach, liver, gall-bladder, its ducts, the lungs and the heart.

From the right pneumogastric, the left semilunar ganglion and the *coeliac plexus*, branches that form the splenic plexus are found. They follow the course of the splenic artery into the substance of the spleen, giving off in its course filaments to the pancreas, called the pancreatic plexus, and the left gastro-epiploic plexus, which accompany the gastro-epiploic sinistra artery along the convex border of the stomach.

At the junction of the right pneumogastric with the *coeliac plexus* comes off a nerve which joins a nerve coming down from the solar plexus, making the superior mesenteric plexus. It surrounds the mesenteric artery and follows it into the mesentery, where it splits into many smaller plexuses, which are distributed to all parts of the mesentery

supplied by that artery. Thus we have the pancreas, small intestines, ascending and transverse colon, supplied by these sympathetic nerves. The nerves which compose these plexuses are white in color, firm in texture, and have many ganglia formed upon them, near their origin. The aortic plexus is formed by branches coming from the semilunar ganglion, renal plexus and some from the lumbar ganglia. It is found upon the sides and front part of the aorta between the superior and inferior mesenteric arteries. From this plexus arises the inferior mesenteric, part of the spermatic, and the hypogastric plexuses. It furnishes filaments to the inferior vena cava.

The inferior mesenteric plexus is made from filaments coming from the left side of the aortic plexus. It surrounds the inferior mesenteric artery, follows its course into the mesentery, divides into many smaller plexuses, to be distributed into the substance of the descending colon, sigmoid flexure and the upper part of the rectum and in the pelvis it anastomoses with the left hypogastric plexus. The hypogastric plexus supplies the pelvic cavity. It lies in front of the promontory of the sacrum, between the two common iliac arteries. It is formed by the union of numerous filaments which descend on each side from the aortic plexus and the lumbar ganglia. This plexus has no ganglia upon its branches, and bifurcates into two lateral portions called the pelvic plexus. This plexus is sometimes called the inferior hypogastric plexus, and is situated at the side of the rectum, vagina and bladder in the female, and in the male beside the rectum and bladder. It is formed by the hypogastric plexus and branches from the second, third and fourth sacral nerves and by a few filaments from the first two sacral ganglia. At the junction of these nerves, small ganglia are formed. From this plexus numerous branches are distributed to the organs of the pelvis. The branches follow the branches of the internal iliac arteries, whose muscular walls are partly supplied by their filaments.

The inferior hæmorrhoidal plexus arises from the back part of the pelvis, supplying the rectum except its superior part, but joins with branches from the superior hæmorrhoidal, which is formed by branches from the inferior mesenteric plexus. The vesical plexus arising from the anterior part of the pelvic plexus is composed of large numbers of spinal nerve fibres. They follow the vesical arteries and are distributed at the sides and base of the bladder. Numerous filaments pass to the vesiculæ seminales and vas deferens. Those filaments going to the vas deferens join on the spermatic cord, with branches from the spermatic plexus. This last plexus, large in size, is the continuing downward of the pelvic plexus, into the substance of the prostate gland, vesiculæ

seminalis; and the erectile tissue of the penis, consists of two sets, the smaller and larger cavernous nerves. They are small filaments which spring from the prostate plexus at the anterior border, and joins with branches from the internal pudic nerve, when it passes forward beneath the pubic arch.

The vaginal plexus arises from the lower part of the pelvic plexus. It is lost in the walls of the vagina, being distributed to the erectile tissue of the anterior part and to the mucous membrane. These nerves contain a large portion of spinal fibres.

The uterine plexus arises from the superior surface of the pelvic plexus above the point where the branches from the sacral nerves join the plexus. Its branches follow the uterine artery to the sides of the uterus, between the layers of the broad ligament, and are distributed to the cervix and lower part of the body of the uterus, forming the uterine ganglion, described above, and sending filaments into the substance of the uterus and its mucous membrane. Other branches are sent to the tubes of Fallopius and their mucous membranes. Some branches from the hypogastric plexus are sent into the substance of the uterus, on whose branches numerous ganglia are formed.

This, gentlemen, completes the anatomy of this important system of nerves, and through its vast chain and network of connections, through its ganglia and trunks I propose to trace some diseases of liver, stomach, and gall-bladder, which depend upon diseases existing in uterus, tubes and ovaries, and vice versa. I will try to demonstrate disease of rectum producing cystitis and prostate trouble, or the opposite. Will try to show some of the causes of hysteria, chronic disease of the stomach and heart depending on troubles from the kidneys and pancreas, and as far as possible how to remove them.

Let us first review the little that is known concerning the physiology of this system of nerves and try to demonstrate by analogy why some ganglia and branches are composed of gray cells and some of white. As we look back for the thoughts of our old teachers, we find Varoleus, Sylvius, Fabricius, Valsalius, Willis, Hallier, taught the structures and mode of distribution of this system, but their functions were not known or but crudely understood. Hippocrates, Galen, the Arabian and Alexandrian schools, knew and taught the irritable properties of nerves, but down to the days of John Hunter but little more was known. These early writers distinguished between motor and sensory nerves, but taught little about the sympathetic nervous system. Willis, in his "*Descriptive Cerebro and Accessory Nerve Anatomy*," printed in 1664, corroborated by Haller in his book on the origin of the intercostal

nerves, written at Gottingen in 1793, considered the ganglia to be small brains for the secretion of nervous fluid or animal spirits, an opinion embraced by Richerand and Cuvier. Cuvier taught that these ganglia are larger and more numerous when the brain was deficient in size. Lancisi, in a dissertation on the unique structure of ganglia, printed in 1741, together with Vicq d'Azyr, regarded the sympathetic ganglia as a sort of heart for the propulsion of spirits, or as reservoirs for keeping them in deposit. Scarpa, in his comments on the nerves, printed in 1741, treats them as synonymous with plexuses, being plexuses with filaments in close approximation, and the plexuses he regarded as ganglia, whose filaments are more separated. He taught their function was to mix and unite various nerve filaments with each other, and to the spinal cord and brain. Dr. Wilson Phillips, in his "Inquiry into the Nature of Sleep and Death," printed in 1834, wrote his belief that these nerves are secondary sources of nervous influence, the specific office of which is to receive supplies from all parts of the brain and spinal marrow, to transmit their united influences to the organs to which the nerves are distributed, while some conceive that at least one office is to communicate irritability to the tissues which they supply.

Sir E. Home, in his lecture on comparative anatomy, given in 1828, considered the structure of the sympathetic nerves to be intermediate between that of the brain and nerves, the brain being composed of small globules, suspended in a transparent, elastic, jelly-like mass, while nerves were made up of single rows of globules, and the ganglia consisting of congeries of nervous fibres, compacted together. Volkmann, Bidder and Reichert, as given in Muller's Archives, considered the sympathetic nerve fibres as distinct in size and structure from the cerebro-spinal. Valentine maintained there was no difference. Fletcher, in his "Rudiments of Physiology," issued in 1836, taught that the sympathetic ganglia and plexuses were but the pathways over which brain and spinal nerve energies traveled to the internal organs and back again.

Johnstone, Reil and Bichat taught that these nerves rendered the organs to which they go independent of the will.

Lobstein, in his work on the sympathetic system, printed in 1830, assigned three functions to this system,—that they presided over nutrition, the action of the heart, and the circulation of the blood; secondly,—to maintain a communication between the different organs of the body, and thirdly, to connect the brain and abdominal viscera. Remak believed in two sensoriums—the one of brain and spinal cord, the other that of the ganglionic system. Bronsais taught that the sympathetic had connections with brain and spine, but did not originate from either;

it received from the cerebral nerves stimulating influences, which are independent of the centre of perception. He also taught when irritation predominated in the viscera it is conveyed to the different organs of the viscera and to the cerebrospinal nerves, which transmit it to the brain. Reil and Bichat thought these to be the great nervous centres of involuntary functions, terming them organic nerves, in contradistinction to the animal nerves, which preside over animal functions. Carpenter taught that the branches from the sympathetic are distributed to the organs of digestion, secretion, to the heart and lungs, and particularly to the walls of blood-vessels, on which they form plexuses, whose branches accompany their minutest ramifications. The sympathetic system contains both classes of nervous fibres, the ordinary white tubular fibres, all of which are derived from the cerebrospinal system, and the gray cell which seems to belong to the system itself. From the spinal, both motor and sensory are transmitted into the sympathetic. The trunks that proceed from the semilunar ganglion are almost composed of gray or organic fibres, while the trunks which proceed from the spinal chain of ganglia are composed of white fibres. The sympathetic nerves possess a certain degree of power of exciting muscular contractions in the many parts to which they are distributed. Thus, by irritating them, immediately after death of an animal, contractions may be excited in any part of the alimentary canal, from the pharynx to the rectum, according to the trunks which are irritated. In the heart, after its ordinary movements have ceased; in the vena cava and thoracic duct; in the ductus choledochus, uterus, Fallopian tubes, vas deferens, and vesicular seminalis. It is by virtue of this system that movements of muscles of the lower extremity, in a very limited degree, not infrequently occur after destruction of spinal cord in dislocated and broken vertebræ. But the same contractions may be produced by exciting the roots of the spinal nerves from which the sympathetic receive their white fibres. No pain is experienced when the sympathetic trunks alone are injured, hence in health, of themselves, there are no signs of their being sensory nerves. But in diseased conditions, involving the same part of the sympathetic, violent pains are felt in them, but these pains can be produced only through the connection of the sympathetic with the spinal sensory nerves.

As yet our knowledge of this important system is very limited, but many experiments and clinical cases point to this system as being closely connected with many emotions of the mind; using this system as a channel through which passions and emotions affect organic functions, and especially through its power of regulating the caliber of blood-

vessels. Thus we have palpitation of the heart by an agitation of the mind, and why may we not have an agitation of the mind through some fault in circulation; spasm of the heart and death through fright or terrible emotions; faintness from sudden shock; blushing and pallor through emotions of fear, shame or embarrassment? We have salivation, lachrymation, decrease or increase of mammary secretions; retention or evacuation of urine and feces. We have suppression of bile and intoxication, and acid stomach, suppression of pancreas through emotions of fear, sorrow, anger or grief. And I again ask the question, Why may we not have disturbance of nerve cell and mind through diseases of these organs enumerated through their action upon the sympathetic nervous system? In these conditions the sympathetic acts so as to harmonize the cerebro-spinal system with the sympathetic, so as to bring the various acts of secretion, excretion and nutrition into mutual conformity. Again this system continues the action of nerve forces from brain cells to the viscera, so that the functions and actions of these work with the action of muscles, in conditions constituting one act. Thus we have the action of the intercostals, the pectoral, serrati, omo-hyoid and abdominal muscles stimulated by cerebro-spinal nerves, and by connections with these nerves with the sympathetic, we have organs of the viscera acting in unison with the respiratory muscles during the action of breathing. The lungs are told that the heart is sending blood to its cells. The heart knows that the lungs are acting. The liver knows that lungs and heart are acting on its surface or through its cells, by the rising and falling of the diaphragm and the excretion of bile. By the connection of the sympathetic with the cerebro-spinal system, the spleen, liver, pancreas and bowels receive impressions that substances are being placed in the stomach, and prepare to play their part in the function of digestion and assimilation. Through this connection the stomach knows when substances are placed in the mouth.

Through this system the bladder and urethra become aware that the kidneys are secreting and excreting. The muscles aiding defæcation become informed that the exacuation of the bowels is desired. It is through the sympathetic connection of nerves that the testicle acts in unison with some functions of the kidneys, ureters and prostate gland. Retraction and pain in a testicle are not uncommon symptoms of kidney troubles. Disturbances in the function of the uterus, ovaries or testicle often depend upon disorders of the liver and gall-ducts. Spasms of muscles, disturbances of heart and lungs, impaired digestion, loss of consciousness, obstruction of gall-duct and exaggerated reflexes are often caused by disease or disorders of the testicle, urethra, cervix,

uterus, ovaries, kidneys, bowels and stomach, through the knowledge conveyed by these diseased organs to sympathetic nerves and by them to cerebro-spinal nerves, which convey the impressions to the brain cells and back to the organs acting in sympathy with the parts diseased or deranged. But, gentlemen, I could not pass these physiological demonstrations by without asking why the sympathetic system has gray nerve cells? Of what use are they if the brain completely controls the sympathetic? We all know the functions of gray cells are to originate nerve forces and psychical actions. Memory and reasoning reside in gray nerve cells. Muscular energy is produced by them. Original thought is part of their function. They act through the stimulus they receive by blood-corpuscles. Their vital power is lessened, retained or accelerated in proportion to the amount of blood they receive. Stop to portions of gray matter its blood stimulus and it ceases to act. Shut off the supply of blood to one-half of the gray cells and death follows. Stop the blood stimulus to certain parts, and paralysis follows; to other parts, and memory fails. Reduce the nutrition to gray cells, and melancholia follows. Overstimulate these cells, and mania is the result; continue an active stimulation without rest to cell, and delusions, hallucinations, illusions, and chronic dementia follows. Reduce the circulation to these cells, and many phenomena of nervous depression or accelerated action follows. This is as true in the gray cell of the sympathetic as in the brain. The memory in the gray sympathetic cell does not cease to act when the memory of the brain cell has ceased. Because the insane who have forgotten the past perform their action of digestion, excretion, secretion and circulation just the same as before. Whether the gray sympathetic cell can by its blood stimulation produce a psychical action or not, I am yet undetermined.

Let us now turn to some diseases that produce disordered function in organs remote from the diseased organ. First of all I wish to show that disease of uterus, tubes or ovaries often produce spasms of gall-duct, dyspepsia and bowel troubles, or vice versa, and trace it through the sympathetic system.

Mrs. R., aet. 30, married and having one child, came under notice during the summer of '96. She was vomiting, suffering much pain, which came on all of a sudden and left her suddenly, reappearing soon again and often lasting for hours, in the region of the gall-duct. She was jaundiced, bowels constipated, urine scanty and reacted to the test for bile. She had much pain in the bowels, suffered from palpitation of the heart, had chills and fever. She gave a history of suffering, attacks like this one many times throughout the year for several years back.

They often lasted several weeks, then she would be free from pain, excepting the suffering from her stomach, for several weeks, when they would again return. For several years she often skipped her menses, which, when they did come, were scanty and painful. I apprehended gall-stones. Inspection of abdomen showed a swelling over the region of the common bile-duct which was very painful to the touch. The liver was engorged, and pain was produced by pressure. Her appetite was poor; she was a great tea-drinker and meat-eater. The pain and vomiting were so distressing at the first visit that morphia in eighth of a grain doses was prescribed every four hours until relief was obtained. Tea and meat were prohibited; her diet to consist of gruel. Calomel, with soda bicarb. and soda salicylate, was prescribed. A fly blister was put on the belly over the common duct. At the evening visit pain was considerably relieved. No action of the bowels during the day, nor for several days previous, during the time she was suffering. The anodyne was omitted and enæmas prescribed. Her kidneys were yet inactive, and she complained of severe pain in the region of the right ovary. Mercury, soda bicarb. and salicylates still continued. The evacuations from the bowels were saved completely. The next morning pain gone in the gall-duct region and ovarian pain reduced. More urine and bowel evacuation. Searched for gall-stones carefully, but found none. Jaundice better. Continued treatment for the day. Requested that all evacuations from the bowels be saved, which was done. Rested well during the night. The next day some soreness in the region of the liver; no pain in gall-duct; ovarian pain better; urine plenty, and no bile found. There was considerable looseness of the bowels. Examined carefully for gall-stones, but found none, nor have I ever found any in her case. Changed the treatment to leptandria, wild yam and quarter-drop doses of cannabis indica. Her diet was gruel. She began to improve, and her stomach became better. Several days of gruel diet was changed to a diet of brown-bread, oatmeal, rice, fish, game and fat meats. She recovered and proceeded finely for several weeks, when she dropped her medicine and her diet, only to have a return of her trouble. Her uterus was examined, no laceration, no displacement, some cervical catarrh. Her menstruation during this period was increased more than it had been for years, and without much pain. Her trouble was a second time treated like the first, with good results. Her case was one of stomach trouble involving the duodenum and the common gall-duct. It was of catarrhal character. She made a good recovery. She continued the diet proposed, adding bacon, ham, eggs, and fat pork. She drank buttermilk instead of tea and coffee. Ate fruits,

and for three months took *cannabis indica* and fluid extract of wild yam. Her menstruation has become regular, without pain, cervical catarrh has disappeared. Her mind is brighter, and up to date has been free from trouble. In this case the stomach, bowel and gall-duct trouble produced a disturbance in the sympathetic of the organs affected, causing a disturbance of the sympathetic and vasomotor centres, reducing the amount of blood to the different parts of the body, lessening nutrition, secretion and excretion, producing disturbance in the functions of ovary and produced catarrh of the mucous membrane of the uterus, which, through the action of micro-organisms, produced leucorrhœa. The enervation of nerve and brain-cell, because of the lessening of blood-supply, produced a temporal melancholia. The action of the mercury was antiseptic, of the salicylate, slightly stimulant to vasomotor nerves. The action of wild-yam in this case I cannot explain. It is used by me empirically. The action of *cannabis indica* is stimulating to sympathetic nerves. Increasing heart's action, carrying more blood to tissues and brain, with their normal functions, were performed. Tea and coffee, boiled potatoes and beef in any form seemed to keep up an unnatural condition of nerves in individuals predisposed to nervous troubles. Complete change of diet always works good in any case treated.

Case No. II. was Mrs. C., aet. 35, married, and had two children. She came from Ontario three or four years ago. Previous to seeing her she had scarcely seen a well month since she left Canada. She came under my notice two years ago last November, suffering from menorrhagia, chills and fever, pain in ovarian regions, bowels constipated, urine scanty and yellow, whites of eyes and skin yellow, pain under the lower ribs and over the region of the common gall-duct, which place presented a swelling an inch in length; she was vomiting. She gave a history of having suffered similar attacks frequently during the past two years. Often she skipped her menses, and when they did come they lasted half a day, accompanied with much pain. She said the pain seized her in the region of the common gall-duct, suddenly. It sometimes came on in the middle of the night, waking her out of a sound sleep; at other times it would seize her in the day time and would be so severe as to cause her to perspire and cry in agony. It would disappear after a time as suddenly as it came. She was a thin person, and very much depressed; often expressing herself that if it were not for her child she would kill herself. She had been treated by a surgeon of this city, who wished to perform an operation, believing an abscess existed in that pocket of the peritonæum between the liver and the

stomach, bounded by gall-duct, stomach, liver and duodenum. This was refused, and surgeon said he could do no more, and for her to get some one else. She had been sick now two weeks. Vomiting and suffering. When I saw her at 3 A.M. she had just started in to flow for the second time that month, and she was suffering from pain in the ovarian region. Believing from the history that gall-stones might exist, I looked carefully for them, but never found any. The treatment in the early stage of this case was the same as in the last one. Fly blisters were applied. Mercury, soda salicylate prescribed. Gruel given for diet. She improved, and for several days was about again. The menstruation lasted but six hours. For two weeks she followed a diet of game, fish, rye bread, no tea nor coffee, but buttermilk in its place. The yellowness of skin cleared. At the end of that time she again became unwell, and was seized again with another severe attack. Thinking that the uterus or ovaries might be the cause of the attack, I made a thorough examination under chloroform, but found them all right, except a slight leucorrhœa. Her stomach never bothered her, except during these attacks, but her bowels were generally constipated. Believing her bowels to be the cause of her trouble, I reasoned that thirty-two feet of intestines were inactive because of some disturbance of the sympathetic system. What it was I could not determine. Treated her again with a fly blister and mercurials, with gruel diet. Again she improved. Kept her bowels open and in three weeks she again had an attack, which was preceded by menstruation that lasted one day. The attack was very severe and lasted one week. I had her on anodynes for some time. She again recovered. I continued cathartics, and she went a month, when menstruation brought on another attack. This was combated and the diet strictly followed. She was placed upon mercury until its full effects upon the gums, mouth and throat were obtained; an old-time mercurial stomatitis. This lasted her ten days, when she recovered. I again placed her on fluid extract of wild yam and cannabis indica. She improved rapidly. Her appetite improved, but her diet was not changed, which consisted of sweet potatoes, baked potatoes, fish, game, bacon, ham, eggs, fat pork, oatmeal, rice, tapioca, buttermilk and fruits. Beef in all forms, and boiled potatoes, wheat bread and beans were prohibited. Her circulation became better; her melancholia disappeared; her bowels became regular; her menstruation became regular and lasted from three to five days. She gained in weight, and has no more return of her old trouble up to this day. Now, gentlemen, what was the cause of her trouble? We may differ in our opinions, but I believe that change of climate, water and surroundings so disturbed the nervous

system as to depress circulation. Constipation arose and increased the trouble. The confined bowels produced auto-intoxication, and the reduced circulation in stomach disturbed its digestive powers, impoverishing the blood. The depressed circulation in the female organs existing for so long a time, together with the action of micro-organisms, produced endometritis and disturbance of ovarian function, which in its turn became an acting factor. The nervous system became irritable, through lack of proper blood-supply, causing spasms of gall-duct and melancholia in a mild form. The treatment was to change the nutrition of parts involved, and general nutrition. The mercury was laxative, antiseptic and increased red blood-corpuscles. *Cannabis indica* stimulated vasomotor nerves, and although the treatment was heroic, it did its work. On my case book are six other cases similar to the two recited, all of which are improving or well.

Let us now pass to Mrs. P., or Case III. She came under notice two years ago last July. At the time she was suffering from fever, headache, vomiting, pain throughout her bowels and in the right ovarian region. She was jaundiced, scanty urine, which gave a reaction to bile test; very restless and a severe pain over the common gall-duct. The history showed the patient a sufferer for eight years. She was about 30 years of age, very thin and a mother of three children. Her youngest child 9 years of age. Since the birth of her last child she has had much suffering. At intervals of about three or four months she has had severe attacks, like the one described. Her mind was much depressed. Physicians before had treated her by hot applications and scarifications of cervix. Inspection showed a swelling over the common gall-duct, painful to touch; pain around the margin of the ribs of right side. She had been sick nearly a week. She suffered much from anorexia, pyrosis, bloating and constipation. Examination of uterus showed leucorrhœa, a laceration with eversion, much congestion. A blister was applied over the region of the common gall-duct. She was given cool baths, hot application of turpentine over the abdomen, hot douches of water, one gallon every three hours, enemas of soap and water. The mild mercurial, soda salicylate and a diet of gruel. She was a tea-drinker. She was allowed nothing but cornmeal gruel. She improved. Her menses were present, but lasted one day. Her menstrual history shows some months in which she became unwell twice, it lasting but a short time. She has had in eight years three miscarriages. After recovering from the attacks, which lasted three days, from my first visit, she was put upon a diet of brown bread, baked potatoes, sweet potatoes; no beef nor boiled potatoes; fish and game were

allowed; eggs, fruit and buttermilk instead of tea or coffee. Her medicine consisted of cimicifugin, fluid extract of wild yam and cannabis indica in half-drop doses. She improved until several weeks later, when she had another attack, seizing her during the night. She was sick with this about ten days, suffering as above described. The same treatment was repeated, and a trachelorrhaphy urged. She consented. With assistants I operated. In pairing the cervix a number of chains of lymphatics containing pus were opened. The cervix was rapidly dilated and uterus slightly curetted, packed, and the torn cervix united with silk sutures. She made a fine recovery in all senses. Her pain in the ovarian regions disappeared, appetite became better, bowels regular, and she gained in weight. Her mind improved; menstruation became regular, and from a lady broken in health and thin, she is now fleshy and enjoys perfect health. She still abstains from beef, boiled potatoes, tea and coffee, but eats almost everything else.

Now what was the trouble in this case? Scar tissue bound down sympathetic nerves. An endometritis disturbing sympathetic nerves; a pachy-salpingitis of a mild form disturbed sympathetic nerves. From these sources the vasomotor centers became depressed; excretion, secretion and circulation were disturbed; the glands of the stomach were starved, its mucous membranes ill-nourished, and fermentive processes went on by the agency of micro-organisms; the mucous membrane became congested; the intestines suffered likewise. The result, spasm and catarrh of the common gall-duct and jaundice. Confined bowels, through ptomains pent up, produced auto-intoxication. The brain and spinal cord was ill-nourished because of impoverished blood and a feeble circulation, hence depression of the mind. In all of these cases was hysteria present.

We again pass to Mrs. E., whose home is at Smith Creek, Mich. She came under notice last July. She is married, was never pregnant. She was thin and suffered from constipation and dyspepsia at times. She had been under treatment for three or four months for uterine trouble. She, at the time of the first visit, had fever, much pain in the ovarian regions and lower portion of the abdomen. The result of too much local treatment. In a week she was able to stand a thorough examination; uterus mobile, ovaries in normal position; some cystitis; rectum and anus normal; cervix congested and a pinhole orifice. The history showed menstruation beginning at 18; she flows about a day, with much pain; she had a cough; she suffered since her menstruation with bloating, loss of appetite, anorexia, often pyrosis, rumbling in stomach and bowels, a feeling of hunger and faintness before meals,

and when at a meal a mouthful or two was all she could eat, followed by distress. This had lasted for several years. She was treated by many for stomach trouble, with but temporary results. There also existed an endometritis. I operated the middle of July by rapid dilatation of cervix and curettement. Since that time she menstruates three and four days, but the first day there is some pain. Her dyspepsia has disappeared, cough almost disappeared, bowels are regular, and she has gained twenty pounds. This is another illustration of disturbance of sympathetic pelvic nerves, which have disturbed vasomotor centres, producing faulty secretions, dyspepsia and vitiation of blood and malnutrition.

Again, in the winter of 1895, while house surgeon to Emergency Hospital, there came under notice Mr. J., aet. 22, single, and a basket-maker by trade. He was suffering from melancholia. Very anæmic, dyspeptic and nervous. He could not sleep nights, his memory was confused, and often his friends were afraid of him because of sudden outbursts of anger, at which times he had no control of himself. He had been a masturbator for several years, but had refrained from the habit a year previous. He suffered from spermatorrhœa, nocturnal emissions often three times a week, sometimes once in two or three weeks. His hands and feet were always cold, and he was extremely thin. Examination of prostate showed no enlargements. Examination of urethra showed in the prostatic urethra an extreme sensitiveness. The passage of a sound would produce a hysterical attack. He was placed upon hypophosphates and iron, one grain valerianate of zinc pill at bedtime, and the passage of a sound three times a week. In a month the sound could be passed without producing nervous symptoms or pain. He obtained better rest at night, appetite somewhat improved, mental condition about the same, and had two nocturnal emissions during the time. He was under observation about six months, during which time tonics and baths, together with the passage of sounds, cleared up his condition. Spermatorrhœa entirely disappeared, and bowels became regular. He slept soundly, stomach did its work normally, his spells of anger disappeared, his nervousness disappeared, and his mind became as good as any one's.

Here is a condition in which the sympathetic nerves distributed to the prostates and urethra were in a constant state of irritation, which, in turn depressed the nerve forces of vasomotor centres, producing a less flow of blood to tissues. Hence lessened secretion, stomach trouble and starved nerve cells, producing sleeplessness and melancholia.

Gentlemen, these are a few cases illustrating the subject before you.

Many more could be given if time permitted. If I have awakened within your memories cases which you all have treated, and if they can further aid us in the study of this important part of anatomy, I will consider the time used in preparing this paper well spent.

I thank you for your kind attention and forbearance in listening to a subject of which the writer is comparatively ignorant.

ECLAMPSIA.*

BY F. L. BRIGHAM, M.D., PITTSFIELD, VT.

In introducing my paper on Eclampsia, I have formed my opinions largely from the gleanings of other writers upon this subject and whose experience and ideas I shall, to some extent, reproduce.

Eclampsia is a symptomatic disorder, characterized by convulsive or epileptiform seizures, that suddenly come on prior to, during, or after labor, which is fortunately, in most cases, easily controlled. Its frequency is in about the proportion of one in five hundred pregnancies and the death rate nearly one in seven hundred confinements, as stated by the board of health of New York City, taken from a nine-years' record.

In my own practice, eclampsia has occurred about once in one hundred cases, and the death rate is rather uncertain for the reason that the only case I have lost was my first, the record extending over a period of twelve years.

My treatment in my subsequent cases has been materially different from my first.

In the majority of patients the most important premonitory symptoms announcing the impending outbreak are headache, often limited to one side, loss of memory, vertigo, gloomy forebodings, flashes of light before the eyes, contracted pupils, amblyopia, sometimes amaurosis, ringing in the ears, dyspepsia, nausea, vomiting, oedema of the face, of the labia majora and of the extremities and, finally and of the most importance, presence of albumin and casts in the urine. The attacks resemble epilepsy, the cry only lacking.

When they occur during labor the first convulsion often is preceded

* Read before the Vermont State Medical Society, October 12 and 13, 1899.

by a short calm in which the patient ceases to complain, closes her eyes and seems to have sunk into a peaceful slumber.

This deceitful truce, which should always excite the keenest attention of the physician, is followed in a few minutes by convulsive movements of the orbicularis muscle, giving to the patient a smiling aspect. Suddenly the eyelids open, the eyes become fixed and the pupils contract, then in a few seconds the eyelids open and shut rapidly, the eyes move from side to side or roll upward, while the pupils dilate and lose their sensitiveness to light; very rapidly the convulsive twitchings extend to the other muscles of the face, the mouth opens and is drawn to one side, the head is moved from shoulder to shoulder sometimes with lightning-like alternations.

As a consequence of the resulting disturbances in the circulation and respiration the carotids pulsate with great distinctness, the superficial veins of the neck swell, the conjunctiva becomes injected, and the face is cyanosed, the heart's action becomes intermittent and the breathing irregular and stertorous. In favorable cases, after the expulsion of the ovum the attacks cease or diminish in frequency and intensity, the pulse and the respirations become quiet and the coma passes gradually into slumber. On awakening, the patient complains of headache and of impaired memory and has no recollection of the perils through which she has passed.

Professor J. C. Edgar, M.D., of Cornell University Medical College, New York City, says that the real cause of eclampsia in the human female is still an unknown quantity.

As far as we are aware, no new light has been thrown upon the pathology and ætiology of the condition; that the pre-eclamptic condition and the subsequent eclamptic seizures are due to uremia hydræmia, ammoniæmia, reflex irritation, microbic influences, or toxæmia, modern research does not permit us to state; most modern observers are agreed, however, that it is caused by the influence upon the system of some toxic material, biliary, urinary, foetal, or all three; but what that material is has not, up to the present time, been determined. It appears probable, however, that the condition has not one but many causes. Dr. W. H. Morse, asking for more light in the "Medical Summary," 1899, says that he finds germs in both the urine and the blood; that he does not recognize them as occurring in pregnant women free from eclampsia.

Further modern research and study would seem to prove that the toxæmia of pregnancy has certain well marked symptoms and signs to guide us to a diagnosis of this condition, and that in the majority, if not

in all instances, this state extends over a period of days, if not weeks or months; that the condition is always accompanied by some failure of the eliminative organs to do their duty seems quite certain, notably on the part of the kidneys. If this assumption is correct, then of the two treatments of eclampsia, the preventive and the curative, the former is by far the most important; especially so when we come to find that in the majority, if not in all instances, the eclampsia seizure is a preventable accident.

Dr. Edward P. Davis has been strengthened in his belief by his own observations, that eclampsia is largely preventable; he also says that when urea fell to 1.5 per cent. stimulation of the excreting processes resulted in distinctly favorable results in all cases in which toxic symptoms were previously present; this does not prove that urea causes convulsions, for experiments upon rabbits that have previously been injected with urea do not show convulsions or toxic symptoms.

Bouchard found that bile had nine times the toxic power of urea, he also proved that normal healthy urine injected into a rabbit produced toxic symptoms in the animal; his experiments further show that in renal insufficiency, the poison retained in the patient's blood greatly contributed to the eclamptic condition; this being true, the elimination of this poison retained in the blood, we would expect, would prevent an eclamptic seizure.

We are all familiar with the fact that when the foetus dies in utero and is delivered, as in the case of a living child, the eclamptic condition usually ceases.

Our enlightenment as to the cause of puerperal eclampsia, little as it is, gives us a working theory, if not a key, to successful preventive treatment. Our early recognition of the pre-eclamptic state is essential to successful treatment; something besides an examination once in one, two or three months for the presence of albumin is necessary, since the absence of albumin in the urine is found in from nine to sixteen per cent. of cases and is quite as fatal, if not more so, than when eclampsia is found with albumin present. We must do something more than look to renal insufficiency, as it indicates a marked diminution in the quantity of urine, in the specific gravity of the same and in the amount of urea excreted. When we watch our cases of pregnancy, not only for physical signs of pronounced renal inadequacy as an index of an approaching eclampsia, of the overcharging of blood with toxic material as evidenced by high arterial tension, headache, gastric disturbances, physical and mental lassitude, and failure of bowels, liver, skin, and lungs to properly perform their work, and when we treat the same under-

standingly, then and only then have we performed our duty to our patients. So much for preventive treatment.

The curative I will speak of, by giving cases and my mode of treatment.

Mrs. M. W., age 26, primipara; I was called late in the evening, about eleven o'clock P.M.; patient complained of headache; said she was six or seven months' pregnant, and she had not passed very much urine for several days, until the day before, when she passed more and was all right; as she expressed it, was passing an abundance. Her bowels being constipated, not having moved for several days, I ordered salines and gave triple bromides; when I left her I hoped to find her better, but such was not to be my lot, for I was called in about two hours to find her in convulsions; gave her chloroform and sent for counsel, who arrived in an hour or two, but, in spite of our treatment, my patient died after having convulsions with only short intervals of rest for fourteen hours.

Mrs. I. F., age 28, primipara; I was called in the morning, but was away, so did not see her until about 3 o'clock P.M.; found her in convulsions; her friends told me that she had been having spasms since morning, having had eight convulsions; I used chloroform to control spasms, but they continued for six hours, when she became able to swallow, then I gave her one-half drachm of veratrum viride with one-half grain sulphate of morphine by the mouth. I repeated the veratrum viride without the morphine in one hour, when the convulsions ceased and I delivered her of a child that lived but a few minutes; the mother made a good recovery.

Mrs. A. E., age 19, multipara; I was called in the afternoon at 5 o'clock; found that the woman had been having convulsions all day, having had eight spasms before my arrival, and two after; the first one came on while I was removing my overcoat; I immediately gave inhalations of chloroform to relieve the spasms, then gave veratrum viride twenty drops, sulphate morphine one-half grain hypodermically, as she could not swallow; she had one more convulsion after that, but not as severe, and I delivered her of a three-pound baby that lived fifteen days; the mother made a good recovery.

Mrs. A. N., age 19, primipara; I was called in the evening about 8 o'clock, found that she had had two convulsions; I gave her twenty drops veratrum viride and one-half grain morphine sulphate hypodermically; she did not have any more convulsions and, as she was resting quietly, I did not disturb her for twenty-four hours, when she gave

birth to an eight pound boy; both mother and child did well; the mother made a rapid recovery.

Now, I will not weary you with more cases, for these have proved to my mind that *veratrum viride* is the remedy par excellence in these conditions. I do not, however, believe that it is always necessary to use morphine, and with some patients you cannot, for reason of idiosyncrasy in regard to the drug. I have omitted it where I was sure that such idiosyncrasy had previously existed, and had good results.

Some authors say that morphine is antagonistic to *veratrum viride* in its effects; be that as it may, I had good results when combined, and had very favorable results when the morphine was omitted.

I am well aware that my experience is not enough to prove anything positive, but it is enough to inspire in me confidence in the treatment until some bad results arise to check my further use of the drug; then it may become necessary to look for a different remedy.

In speaking of the above remedy, I have not given my reasons for doing so; it is this: To reduce arterial tension and to soften the rigid os, thereby removing the causes producing the malady.

In earlier days writers taught, and practitioners relied, largely on the use of the lancet, to accomplish these results. I believe that *veratrum viride* is the remedy that will successfully supplant the use of the lancet in treatment of puerperal eclampsia.

THE OPERATIVE TREATMENT OF UTERINE FIBROIDS.*

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The whole subject of fibroid tumors of the uterus is so vast that it cannot be fully considered at such a meeting as this, where the time is necessarily limited, yet I hope that an interesting discussion may be provoked by the following remarks:

The first point to be taken up is *when to operate*. This should not be until after medical treatment has been tried thoroughly and has failed. If, instead of decreasing, the growth is becoming larger, some operative method of treatment ought to be tried without delay, especially if the patient be near or past the menopause, as malignant degeneration is very liable to take place at that period; again, where the tumor is impacted in the pelvis and the uterus contains a growing ovum, the only way in which room can be obtained for delivery *per vias naturalis* is by removal of the growth, which can occasionally be done without interfering with the progress of gestation if the tumor is pedunculated.

Excessive hæmorrhage also calls for prompt operative interference, as do also degenerations of the tumor, such as carcinomatous or suppurative and pressure or neurotic symptoms. Under the latter head are included those cases where the tumor is not giving rise to any local disturbance, but the very fact of its existence has such an effect upon the patient's mental condition that her health is actually suffering. Any gynaecologist with anything like a large practice, and many a general practitioner, also, must see numbers of such cases, where no amount of assurance of the innocent and harmless character of the growth in her particular case will quiet the patient's mind. Where a uterine fibroid is lying perfectly quiescent, giving the patient no trouble and possibly discovered quite accidentally, it is my opinion, and I am sure that all of my hearers will agree with me, that it should be left severely alone. Such a patient should, however, be kept under observation, so as to be ready to interfere should the tumor take on activity. One should, also, in such a case, be chary, especially where the tumor is either interstitial

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or submucous, of advising marriage for two reasons, *viz.*, the increased risks of maternity and the likelihood of the tumor to take on active growth, owing to the increased blood supply brought to the tumor as a result of the pelvic congestion induced by the marital relations. Within the last two years I have operated upon two patients in whom the tumors had been either unnoticed or quiescent until after marriage, the following case being the most marked:

J. H., unmarried, aged 28, consulted me in 1894, on account of dysmenorrhœa and slightly increased menstrual flow. The patient was a highly strung, nervous woman, with a decidedly neurotic family history. She had always had more or less dysmenorrhœa and menorrhagia, but both were becoming worse. She was anæsthetized and the pelvis examined most satisfactorily, as the abdominal walls were thin and well relaxed. The uterus was found to be markedly ante-flexed, but not at all enlarged, and the appendages were normal. Early in 1897 the young lady married, and in June of that year she consulted me again for pelvic pain, when, on making a pelvic examination, the uterus was found to contain a tumor as large as a fair-sized cocoanut. On removal in my private hospital, several months later, this was seen to be an interstitial myofibroma.

The second case came under my notice in the Montreal General Hospital, but was very similar to the above, except that the growth had not been so rapid.

The *nature of the operation* to be performed will entirely depend upon the indications for interference and the site of the tumor.

The operations are as follows:

1. Curetting.
2. Ligature of the uterine arteries, *i. e.*, the Gottschalk-Martin operation.
3. Oöphorectomy, *i. e.*, Tait's operation.
4. Myomectomy by enucleation or otherwise.
5. Hysterectomy.
 - a. Total: Abdominal, vaginal, abdomino-vaginal.
 - b. Supra-vaginal.
1. *Curetting* in cases of fibroma uteri is not in any sense a curative operation, but is a most useful measure, nevertheless, where one wishes to make a diagnosis of the condition of the endometrium, or where the patient has been greatly debilitated by profuse and repeated hæmorrhages. Here curetting and packing the uterine cavity will often enable one to tide a patient over until she has had sufficient time to gather strength to undergo a more radical and serious operation.

2. *Ligature of the uterine arteries per vaginam* is a comparatively new operation for the cure of fibroid disease of the uterus, and is one which is not very widely practised. This operation was first suggested by Dr. W. B. Dorsett of St. Louis in 1890,¹ but had never been performed by him. Gottschalk of Berlin in 1892² reported having twice ligated both uterine arteries through the vagina for the cure of fibroid of the uterus, with good results. Franklin H. Martin of Chicago³ claims to have devised an entirely different operation in that he includes portions of the broad ligament, the uterine nerves, and, in some cases, the branches of the uterine arteries, as well as the ovarian vessels in his ligature. It seems to me that the same object might be accomplished in a simpler manner by tying the uterine arteries before they give off any branches. Martin, however, has reported quite a number of cases in which he has carried out this procedure with beneficial results, and therefore deserves recognition as the first man on this continent to report a series of cases treated by this method. The object of the operation is, of course, to diminish the supply of pabulum to the growth, and so to starve it out, as it were. It would seem at first sight as if there would be some danger of cutting off too much of the blood supply of the uterus, and so causing gangrene where the ovarian and uterine arteries on both sides are ligated, but no such case has yet been reported, which shows the danger to be more theoretical than real, the collateral circulation apparently being sufficient to nourish the organ.

Dr. Martin considers that the cases most suitable for this form of treatment are those of small interstitial fibroids, especially when they first make themselves manifest towards the menopause. Another class of cases where this operation is indicated is where the patient has become too exsanguinated from repeated hæmorrhages to undergo a serious operation where the hæmorrhage may be stopped to give the patient a chance to recuperate.

The contraindications are: (1) where the tumor is either submucous or subserous; (2) where the tumor has risen out of the pelvis to such an extent that the bases of the broad ligament cannot readily be reached, and (3) where the patient is near the menopause and has a large tumor which has suddenly taken on activity, the tendency of such a tumor to become malignant being much greater than where it is of small size.

3. *Oöphorectomy*, or Tait's operation, was formerly largely practised for the cure or relief of fibroids of the uterus, the chief contraindication being the fact of the tumor being so large as to cause the

appendages to be flattened out upon its surface in such a way as to render their removal extremely dangerous.

In the present advanced stage of pelvic surgery, we are enabled to perform the more radical operation of hysterectomy and myomectomy with such a low rate of mortality that they have almost entirely supplemented the less heroic and equally less efficacious operation. This latter is now chiefly limited to (1) those cases where the patient will not submit to removal of the uterus; (2) where, for any reason, it is found impossible to proceed with the removal of the uterus after the abdomen has been opened; and (3) where celerity in operation is essential on account of the patient's condition. One other class of cases might call for this operation, *vis.*, where the only trouble to which the tumor is giving rise is pressure, and its efficacy under such a condition was well illustrated in a patient who came under my care some four or five years ago. At that time she was complaining of retention of urine, requiring to have the catheter passed every four hours for some days, as well as a certain amount of dull pelvic pain. She was admitted under me to the Montreal General Hospital in this condition and found to have an interstitial fibroid of the uterus filling the whole pelvis. On opening the abdomen, the tumor was found to be so firmly wedged into the pedvis that its removal was deemed inadvisable, so both sets of appendages were removed. The result was almost better than one could expect, as within three weeks the patient could pass her urine unaided, and she has continued in good health up to the present, the tumor, although but slightly diminished in size, giving rise to no symptoms whatever. This operation acts not only by bringing about a premature menopause, but it also reduces blood-supply of the uterus on account of both of the ovarian arteries being tied off, but, as stated elsewhere, it is not the operation one would select by preference except in a very limited number of cases, although occasionally it is followed by a good result, yet in a large percentage of those cases where the ovaries are removed for the purpose of stopping hæmorrhage it fails, and the patient has to undergo the discomforts and risks of a second operation.

4. *Myomectomy* may be either a simple operation, as where one has to deal with a pedunculated growth, or else be extremely complicated, as in cases where a number of fibroid nodules require to be enucleated from the substance of the uterus. In my opinion, it is a proceeding the applicability of which is limited to those cases of fibroid where the line of demarcation between the tumor and uterus is very decided, or else to those cases where one or more small nodules are pro-

jecting to some extent beneath the peritonæal covering of the uterus, and whose presence has been discovered during an abdominal section for some other affection. Under the latter condition, these nodules should always be removed unless the patient is beyond the menopause, as their removal adds very little to the risk of an abdominal section, and they are always liable to take on active growth. Some operators go to the length of saying that one can thus remove any number of small tumors, suturing up the cavities with catgut. Among the strongest advocates of this method of treatment is Howard Kelly,⁴ who says that "myomectomy should always be preferred to hysteromyomectomy in a young woman, provided that there are no complications," whereas Penrose⁵ of Philadelphia takes exactly the opposite view, *viz.*, that hysterectomy is preferable to myomectomy as a rule. Kelly cites the case of a patient from whose uterus thirty distinct nodules were removed, and he claims that this patient not only had a good recovery, but that she also possessed a healthy and useful uterus. It hardly seems possible that a uterus in which so many cavities were made and then sewn up could be termed a good healthy organ. A quantity of scar tissue would be formed which would certainly be unfavorable to gestation, and when we remember how frequently carcinoma develops in connection with such tissue, it would appear, *a priori*, that a structure which had been so maltreated would be extremely liable to develop serious trouble, especially were pregnancy to follow. Martin of Berlin is another advocate of this procedure, but even in his hands the mortality from hæmorrhage and sepsis is very great. Previous to incising the tissue over the tumor, he passes a temporary elastic ligature around the lower part of the uterus, thus checking the hæmorrhage which would otherwise occur during the process of enucleation.

Where the tumor is submucous and the cervical canal can be readily dilated sufficiently, the myomectomy may be done by morcellement, which is too old and well known an operation to deserve more than mention at such a meeting as this.

Since January 1st, 1897, twenty-seven cases of fibroid disease of the uterus have been operated upon by me with but one death, which occurred on the eighth day from pulmonary embolism, and of these twenty-seven operations, myomectomy has been done five times, being followed by perfectly smooth convalescence in each instance. The largest individual tumor removed weighed two and one-half pounds, and the largest number of nodules extirpated from any one uterus was five, so it is seen that no very serious cases received this method of treat-

ment. In all five cases, the tumors either possessed well-defined pedicles or else were projecting distinctly beneath the peritonæum.

5. We now come to the most radical operation of all, and that is *hysterectomy*. Although the most radical, this is the method of treatment of uterine fibroids employed by most of the operators upon the continent of Europe and on this side of the Atlantic for the following reasons: First, if the patient recovers from the operation there can be no return of the disease; and, second, in the hands of a skilled operator it is less dangerous than myomectomy by enucleation or morcellement.

Noble⁶ of Philadelphia says of hysterectomy that "when it is done early, before the patient's general health has been broken down, and before complications such as degenerations of tumor or disease of the appendages have taken place, I am thoroughly convinced that hysterectomy for what may be called a healthy fibroid tumor of the uterus, when done by an expert, is as safe, if not more so, than ovariectomy." He advocates supravaginal amputation of the body.

He is supported by the writer of the article upon hysterectomy for fibroids in the "American Text-book of Gynæcology," who states that the mortality following all cases of removal of the uterus for fibroid, including the most complicated cases, should not be more than 8 per cent., while one should not lose more than 3 per cent. of uncomplicated cases, and my own experience tallies with both of these statements. It is a disputed point as to whether or not removal of the cervix adds to or detracts from the gravity of the operation, but personally I prefer to remove it. For one thing, when it is taken away and the ends of the vaginal walls approximated, there is no communication between the raw surface and the exterior by which any germs might enter. You will probably say that, while no germs can enter, this suturing across the top of the vagina prevents any drainage of the raw space left beneath the peritonæum. This is doubtless true, and, therefore, where I am at all doubtful of my technique or where pus in the pelvis has complicated the case, it has been my practice to pack the cavity with gauze, the end of which projects into the vagina, so as to provide drainage and allow of its removal, and then to unite the two flaps of peritonæum by a running suture, thus making the seat of operation entirely extra-peritonæal. Another plea for its removal is the weight of the cervix, which tends to invaginate the vagina. It is held by many that the cervix is the keystone of the arch of the vagina, and that therefore, its removal favors shortening of the passage. In my humble opinion, to talk about the keystone of an arch the uprights of which

are composed of soft, yielding structures is nonsense, and the fallacy of the statement that removal of the cervix renders shortening of the vagina more liable to occur, has been seen not only in my own practice, but also in that of others. Knowsley Thornton⁷ has found, upon examining his patients at different periods after hysterectomy, that not nearly so much shortening followed complete as partial hysterectomy. Again, in a work upon pelvic inflammation, W. R. Pryor⁸ presents a plate which shows the pelvic contents of a woman from whom the uterus had been removed several years previous to her death, and he remarks "notice how the bases of the broad ligaments hold up the vagina. There is no tendency to hernia, and the posterior cul-de-sac is just as deep as it ever was. This specimen is of value to us as showing the manner in which the vaginal vault continues to be supported even after the removal of the uterus." In my practice, out of eighteen cases of hysterectomy for fibroid which I have performed since January 1st, 1897, there has been but the one death above referred to, and of these, fourteen were total hysterectomies, the cervix for various reasons being left in only four. On examining these cases subsequently, I can positively assert that there was no more shortening of the vagina or prolapse of the vaginal walls where the cervix had been removed than where it had not been touched. In four of these cases of total hysterectomy, the cervix was separated from its vaginal attachments and the uterine arteries were ligated through the vagina before opening the abdomen. Where the tumor and uterus are low in the pelvis, so that the arteries can be readily reached, this proceeding is to be recommended, as it greatly simplifies the intra-abdominal work, but the majority of tumors which call for operation will be found to be situated so high up in the pelvis that it will be very difficult indeed to reach the vessels from below. A last argument in favor of the more radical operation is that, while the cervix is present in the pelvis the patient is always liable to disease of that organ, as, for example, carcinoma and inflammation, and, as the cervix is the seat of disease in the majority of cases of pelvic cancer in woman, the removal of that part frees the patient of a serious danger.

Having now decided upon total hysterectomy, by which route is the uterus to be removed, the abdominal or vaginal?

This question has provided ample subject for debate for several years back, but, in my opinion, the two routes should not be considered as rivals in any sense of the word when the disease calling for the operation is fibroid of the uterus, and that is the only question which we have to consider this morning. Where we have a small tumor

which can readily be reached per vaginam, and where the passage is roomy, there is no doubt but that the vaginal is the best route to pursue as it takes no longer than the abdominal method, the patient makes a somewhat better recovery, there is no risk of hernia, and there is no abdominal belt to be worn. If we operate per vaginam, the use of ligatures will be found to be more satisfactory than clamps in preventing hæmorrhage, as they cause the patient no pain, do not necessitate disturbance of the patient for their removal, and there is less danger of secondary hæmorrhage than where clamps are employed. Pean* recommends that all fibroids no bigger than a foetal head be removed per vaginam, all others through the abdomen. In the latter case, however, he removes the supravaginal portion of the uterus through the abdomen, and then takes away the cervix per vaginam, which seems to me to be putting the cart before the horse method of operating, as one usually cures the uterus before removing it, so I fail to see why one should not finish the vaginal work at once instead of having to change the position of the patient twice.

The following was an eminently suitable case for the vaginal operation:

On May 5th, 1899, Dr. Merkley of Edwards, N. Y., telegraphed me to go out and see a case with him, and to be prepared for an hysterectomy. On arrival, the patient was found to be 51 years of age and to have had repeated floodings, the menopause not having yet appeared. Vaginal examination revealed a tumor about the size of a tangerine orange projecting down into the vagina from the anterior lip of the cervix, and implicating the anterior wall of the uterus, as the tumor could not be isolated and the patient was not able to stand the loss of blood occasioned by myomectomy by morcellement on account of the patient's age, it was decided to remove the uterus, which was done per vaginam with the assistance of Dr. Merkley, Dr. Dalmage giving ether. But four ligatures were used altogether, and the field of operation was packed with iodoform gauze, as, having only one assistant and no nurse, I feared that there might have been some contamination of the wound.

All fibroids larger than those above mentioned, *i. e.*, larger than a foetal head, should be removed by the total abdominal hysterectomy, and no one method will be applicable to every case.

The following method has been the most serviceable in the writer's hands:

After opening the abdomen and extruding the tumor through the incision, the intestines above the tumor are covered by aseptic towels.

The anterior layer of the broad ligament of one side is then incised from just below the extremity of the Fallopian tube to the outer end of the fold between the uterus and the bladder, and the vessels contained in this area of tissue are ligatured, each in two places, and divided, the ligatures running beneath the posterior layer of the broad ligament. The ligament is now divided and the other side is treated in the same way. The next step is to make your anterior flap of peritonæum by uniting the lower extremities of the other incisions by a line running across the anterior surface of the tumor a little above the uterovesical fold, this flap being dissected free. The finger now works its way down through the base of each broad ligament until the uterine artery is discovered. This is now isolated as much as possible, is ligated in two places, and divided. After its fellow of the opposite side has been dealt with in a similar manner, the uterus is drawn forward and a posterior flap of peritonæum is dissected down. The vagina is now entered between the bladder and uterus, and, using the index finger in the vagina as a director, the roof is divided all around the cervix and as close to the latter as possible in order to prevent shortening. The uterus, being now free, is removed and all bleeding points are ligated. The two walls of the vagina are then sewn together by a continuous catgut suture, after which a similar suture is used to close over the raw surface, beginning at the outer border of the left broad ligament. The vessels and their ligatures having retracted down between the layers of the broad ligament, the edges of this structure are brought together so as to make the ligatures lie entirely beneath the peritonæum, and the whole raw surface is closed over in this way from one side of the pelvis to the other, when, passing over the extremity of the vagina, it is included in the running suture, so that it receives additional support. The abdomen is then wiped dry and closed.

The accompanying chart shows the average evening and morning pulse, respirations and temperatures for the first fourteen days after operation of the cases of abdominal hysterectomy for fibroid, which have been under my care since January 1st, 1897:

To sum up:

1. A uterine fibroid should not be interfered with unless it is giving rise to serious symptoms, be they mental or physical, notwithstanding the statement of one gynaecologist¹⁰ that he removes all fibroids which he meets with in practice, whether they are causing trouble or not.

2. Curetting is merely a palliative measure, as is, also, in many cases, ligature of the uterine arteries.

3. Removal of the appendages ought to be merely a *dernier resort*, as it practically never cures and does not always even relieve.

4. The operation of selection should be either total hysterectomy or else myomectomy.

5. Myomectomy is to be chosen (a) where the tumor is submucous and pedunculated; (b) where it is subserous and either has

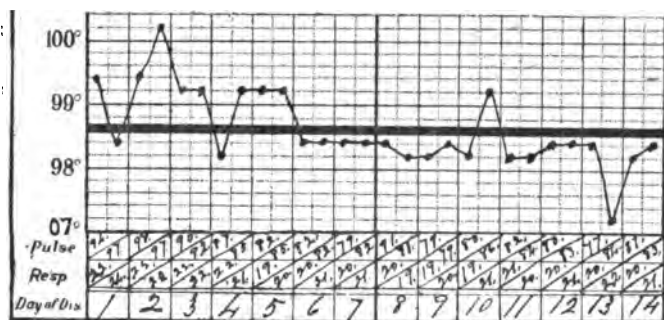


Table showing the average morning and evening pulse, respirations and temperature in eighteen cases of hysterectomy for fibromyoma uteri for the first fourteen days after operation.

a pedicle or a well defined border; (c) where several small nodules lie immediately beneath the peritonæum.

6. Total hysterectomy is indicated (a) where the tumor is submucous and non-pedunculated, and the cervix cannot be dilated sufficiently to allow of morcelllement; (b) where the tumor is either interstitial, large and subserous without a pedicle, soft, fibrocystic, or undergoing degeneration; (c) where the tumor is complicated by diseased adnexa.

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EDITORIAL.

THE HOSPITAL AND DISPENSARY ABUSE.

At last, continued effort to remedy this growing and onerous abuse has aroused public sentiment sufficiently in this State to secure Legislative interference. The lately passed "Dispensary Bill" is a long step towards putting an end to an evil of comparatively recent growth but one whose inherent seductiveness has led to its rapid spread wherever there were physicians to be cheated and laymen willing to cheat. The indiscriminate free treatment of all patients who applied for relief in our dispensaries (without reference to the ability of such patients to pay for a physician's services) directly produced two very serious results: the really poor were discouraged and driven away from the relief to which they alone had a right; young physicians and those struggling along without influence were rapidly starving for want of fees.

The Dispensary Bill aimed to remedy this two-fold evil. Among many excellent clauses these were the most radical and the best: That the names and occupations of all patients, with their means of support, should be obtained by the Dispensary authorities before relief was given and, where there was suspicion that the applicant could pay for medical attendance, no relief should be given until thorough inquiry had been made and proof obtained of such inability to pay.

We have said that this was a step in the right direction; the glaring

defect in the Bill was its omission to include quasi-public hospitals, or those which receive partial support from the public taxes, within its scope. In the latter institutions the abuse is as wide-spread and far more glaring. It is quite demonstrable that there is scarcely a hospital of this character in the city whose twenty, twenty-five and thirty-dollar rooms are not constantly filled by patients who pay nothing to their medical attendants and yet receive daily from their families supplies of expensive fruit and flowers. It is no injustice to say that nearly if not quite all of these patients could afford to pay a reasonable and conventional price for medical attendance or surgical treatment at home but they prefer to obtain, for the price of board and lodging at a hospital, the services of a well-known physician or surgeon. The Hospital authorities care not at all for the surgeon's fees so long as they fill their beds and receive the price of board and lodging; the attending surgeon is willing to forego his fees (being usually a man of large practice) if he may thus keep his beds full, overcome the competition of his medical brethren and maintain his influence with the authorities. Practically he cares not at all that, by bestowing medical charity upon an ostensibly unworthy object, he deprives many other medical men of fees which with justice they look upon as legitimately theirs and the loss of which actually means to them an increased struggle against starvation.

It is not surprising, therefore, to note that in this effort to cast off the burden of bogus medical charity, its partial success was due to the rank and file of the profession. The very eminent members took but a sparing interest if they were not actually opposed to the movement, as in several instances they conspicuously were. Hence, we must reconcile ourselves to the fact, as instanced in this effort to remedy one glaring and cruel abuse, that in every organized endeavor to right an injustice and in every unselfish effort to obtain a common good we must not depend primarily upon those men among us whose prominent positions would naturally bring to any movement an influence at once potent and decisive. If this is true of instances which apply merely to the local benefit of the profession, how much truer must it be in that great universal movement, which must come to the front, for the regeneration and union of the whole profession? This great movement is with us even now and we must not wait for such as these to rise up as leaders or we wait in vain.

No, it is to "the men in the ranks" and to each man in the ranks on whom will depend the union and final betterment of the profession. Each one of us possesses in himself a mighty, potential influence, no

matter how insignificant his status may be, by which he may help or hinder the movement to make of his profession a corporate body in fact as well as in name, to obtain for it a paramount influence in civilized society and thereby place it in a sphere of action where its abounding knowledge and authority must bring forth blessings, in immunity from disease, hitherto unknown to men. This influence each of us can exert practically by thinking seriously of this movement, by bearing it constantly in mind, by making its success one of the great objects of his life; by discussing it with his medical friends in private and in his medical society meetings; by talking of it to his patients. This movement carries with it in a feasible, most direct and most practical manner the union and elevation of the profession and it is tangibly presented in the following formula:

The institution of a Federal Board of Health, endowed by Congress with authority both effective and prohibitory, in legal affiliation with all State Boards of Health, whose Presiding Officer shall be nominated by the medical profession through its representative societies, shall be a Member of the President's Cabinet with the title of Secretary of Public Health and shall also be Surgeon-General of the Army and Navy of the United States.

REVIEWS.

Progressive Medicine—Volume III. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 440 pages, 11 illustrations. Lea Brother & Co., Philadelphia and New York.

The third volume of this yearly digest contains diseases of the thorax and its viscera, including the heart, lungs and blood-vessels; diseases of the skin, diseases of the nervous system, and obstetrics. The current literature has been admirably sifted and briefed so as to cover a large field, giving the salient points of new discoveries and methods as well as short notes of interesting and rare cases; each department, being written from the data throughout by one man, possesses a unity and comprehensiveness, as well as readableness, rarely to be found in works of this sort. There is a good chapter upon methods of physical diagnosis, and a particularly full and valuable discussion of pulmonary phthisis and tuberculosis in all its bearings, including the most recent investigations, its relation with avian tuberculosis, sources of infection, the use of tubercular antitoxines and serum-therapy, and methods of treatment, climatic, medicinal, by the Röntgen-rays, etc. The heart and its diseases are taken up in the same thorough way, and there are also notes upon affections of the other thoracic viscera. Some of the most interesting discussions in the second department are upon urticaria, the parasitic origin of eczema, with especial reference to the morococcus of Unna, and its other ætiological factors, X-ray dermatitis, lupus erythematosus and tuberculosis of the skin. In the third department we note particularly an excellent discussion of cerebral tumors, aphasia and its allied affections, tabes dorsalis, and various functional disorders, while many other affections receive valuable notice, and a number of rare cases are noted. In the last department, pregnancy is taken up, its disorders, auto-intoxication, and the relation of diet to sex; there are full discussions of extra-uterine pregnancy, eclampsia, symphysiotomy and Cæsarean section; the bacteriology of the vagina occupies several interesting pages, and chapters upon the puerperium and its complications, and lactation, close the book.

A. D. C.

TRANSACTIONS OF THE PHILADELPHIA OBSTETRICAL
SOCIETY.

Stated Meeting, October 5th, 1899.

The *President*, CHARLES P. NOBLE, M.D., in the Chair.

A New Method of Diagnosis for Tuberculosis of the Kidney.

By CHARLES P. NOBLE, M.D., and W. W. BABCOCK, M.D.

(See page 489.)

DISCUSSION.

Dr. L. J. HAMMOND: In most of the cases of tuberculosis of the kidneys, as in the one reported here to-night, we find this condition to be secondary to tuberculosis in other parts of the body, generally involving the lungs; and when the pathognomonic symptoms of kidney tuberculosis are manifest the disease elsewhere is well advanced. I think from this fact that the question of diagnosis of kidney tuberculosis, per se at least, will forever remain rather difficult. We well know that miliary tuberculosis, when it does attack the kidney, invariably attacks the parenchyma first or that portion of the kidney immediately above the mucous lining of the urinary tubules. It is, therefore, not until after much destruction has been done to the body of the organ and rupture into the urinary tubules has taken place that the symptoms of tuberculosis are complete, as made manifest by the presence of pus, blood and epithelium usually in the form of casts. When these pathological evidences present themselves the condition is so far advanced that it leaves us in a position to give a very guarded prognosis following operative intervention. I have seen several of these cases, and one such case died about two weeks ago, thirteen months after operation; here the kidney structure was entirely destroyed, there remaining a mere cicatricial mass. The suppuration never entirely subsided. The infection of the kidneys by the tubercle not being in contact with the urinary apparatus itself makes it probable that no tubercle bacilli will be found in the urine after any method of exam-

ination until the disease has so far advanced as to make itself evident by the presence of pus, blood and epithelium.

The last diagnosis I made of tuberculosis of the kidney was entirely through the above evidence; as the examination of the contents of the bladder was acid I assumed that it was from the kidney.

Dr. A. J. DOWNES: I think the main point at issue in diagnosis of tuberculosis of the kidney depends upon the condition of the individual urine and how to obtain the individual urine most easily and frequently and in both sexes. There are two ways of obtaining the urine: by catheterization of the ureters, and by the use of the Harris urine segregator. The most practical and the one that in the future will be most used is the latter. Objections made to the last mode are that probably we cannot absolutely depend on the separation, and that material from the bladder will vitiate the result. The condition of the bladder is known by cystoscopy, which is practical and easy. The separation can always be proven before collecting the urines. I always wash out each side of the bladder before collecting urines.

I think those who find it impracticable have not used it sufficiently long to see whether it is practicable or impracticable. I can say that it is one of the safest and simplest things to obtain the separate urines of a woman by means of the Harris separator. I have used it on a number of cases, including one male, both in hospitals and at the home of patients. This week I obtained at the home of the patient 75 cc. of urine from one kidney, pale, and with a specific gravity of 1006, and 45 cc. of bloody urine from the other kidney. No admixture whatever occurred. I have one case at the present time of tuberculosis of the left kidney on whom I have used the Harris separator at least twelve times, studying the effects of treatment and watching for a better condition of the healthier kidney. Often after starting the stream syphonage is sufficient without the use of suction, thus practically obtaining the urine almost directly from the mouth of the ureter.

I would like to ask Dr. Noble whether he uses methylene blue to determine the secreting property of the individual kidney; also what he generally finds to be the reaction of urine, from a tubercular kidney.

Dr. H. L. WILLIAMS: I don't see how we can be absolutely certain that, because urine drawn from one of the ureters contains tubercle bacilli, we have tuberculosis of the kidney. I had a case a year ago in which the patient presented bladder symptoms for a considerable length of time until it was suspected he might have tuberculosis of the kidney, and in a number of examinations I found tubercle bacilli in large numbers. The patient went away to be built up in general health,

and late in the summer she went to the Johns Hopkins Hospital, where, after a careful examination tubercle bacilli were found. Dr. Cullen found that one ureter was considerably enlarged; it could be traced easily up over the brim of the pelvis. The question arose as to the advisable procedure. She was thought to have tuberculosis of the kidney, and operation was recommended, which the patient refused. She went to Buffalo and has since gained fourteen pounds and continues to improve. To-day she is apparently entirely well. Recent renal examinations have failed to show tubercle bacilli. It seems to me quite probable that only the ureter was affected. I think that the bladder was affected also, and that it is entirely incorrect to say, because bacilli were found, that the kidneys were affected. Finding tubercle bacilli in the urine from one of the ureters is a very important indication, but it does not prove positively that the kidney is affected.

Dr. CHARLES P. NOBLE: The subject is one that I have been much interested in for some years. I have operated on five cases of tuberculosis of the kidney, and the first case, a very advanced one, is now perfectly well. It is now five years since the operation. The case was so far advanced that a perinephritic abscess was about to discharge at the spine. The second case was under my observation for a number of weeks, with a temperature of 104 every evening. She has now become perfectly well, works hard and earns her living. Of the other more recent cases one was a colored woman. She was treated for consumption for some time, because she had a cough in addition to hectic fever. Under very good hands no lesion was discoverable in the lungs, and no tubercle bacilli in the sputum. We took out the kidney and the cough disappeared and the woman got perfectly well. Another case was not so advanced. She has also done well. The final one is the one reported. In other words, all these cases were advanced when they came under my care. There was no difficulty in making the diagnosis by the ordinary means. The method of diagnosis reported by Dr. Reynolds seemed to me so clever that I determined to use it and, as Dr. Babcock has reported, this case bears out his contention.

I think the statement of Dr. Williams is well founded that if you find tubercle bacilli in the urine obtained from one ureter it does not follow that the tuberculosis is in the kidney. On the other hand, if tubercle bacilli were found and there was a healthy bladder I would assume they came from the kidney. With a markedly ulcerated bladder, I would assume that the ureter was involved, and that the infection proceeded from the bladder upwards. So I think, with these practical facts

in mind, we need not be led far astray as to whether the tubercle bacilli comes from the ureter or from the kidney.

With reference to the use of the Harris separator for this purpose, it seems to me it is practically useless, because, no matter which kidney might happen to be tubercular, the tubercle bacilli coming down into the bladder, the bladder would be infected with the bacilli, and no matter if we did obtain urine from the kidneys separately the healthy urine would wash in bacilli before we gained the separation.

As to methylene blue, I have never used it. As to the reaction of tuberculous urine, I think that in tubercular cystitis we frequently find the urine acid. On the other hand, in this case reported the urine obtained from the kidney was alkaline, so my experience would be that the reaction is not constant.

I hope we shall be stimulated to study tuberculosis of the urinary organs more thoroughly.

I do not think the point made by Dr. L. J. Hammond was well taken, namely, that tuberculosis of the kidney is usually secondary. In all the cases I have reported it has been primary. Although we know it does occur, on the other hand it is very frequently primary. So that the prognosis is better than Dr. Hammond would have us believe.

Dr. BABCOCK: I was very glad to hear the point made by Dr. Hammond, that the early cases could not have been diagnosed as the tubercular process was beneath the urinary epithelium in the interstitial substance of the kidney, and therefore the tubercle bacilli would not be excreted. It is rather strange that this could be brought forward as an objection, because cases in which the kidney has been found to be perfectly healthy, or apparently so, have seemed to excrete tubercle bacilli. And in cases in which there has been miliary tuberculosis and in which the process in the kidney was very early the kidney seems to have the power of throwing off this infection.

It is obvious that this test is not of itself a conclusive proof of the necessity for nephrectomy. I think the most we can claim for it is that it has been one of the most valuable secondary aids in the diagnosis of this condition.

Exhibition of Submucous Fibroid.

Dr. HAMMOND: The patient is 43 years of age; her mother died from uterine carcinoma. The patient began menstruating at the age of thirteen. Menstruation was regular and painless until six years ago, when dysmenorrhœa developed, gradually becoming more marked until the present time. For the past four months there has been a very

fetid discharge. Menorrhagia marked, metrorrhagia at times. Patient had just finished menstruating prior to operation, large amount of blood lost and she is quite anæmic.

DISCUSSION.

Dr. KRUSEN: I am much interested in the case, having examined it with Dr. Hammond. I think it presents the old problem of the differential diagnosis of malignant disease of the body of the uterus and a sloughing fibroid. The woman was at the carcinomatous age. There was the enlarged uterus, characteristic of fibroid, with the pain, hæmorrhage and foul discharge which we expect to find in carcinoma of the body of the uterus. The diagnosis of submucous fibroid has been justified by the operation.

Dr. FISHER: As to differentiating between a submucous sloughing fibroid and a carcinoma of the body of the uterus, I think it presents some interesting points. The differentiation here, I should think, would be readily made upon making dilatation of the cervix and then introducing a finger and finding this round mass projecting from the cavity of the uterus, which condition is not found in carcinoma of the body of this organ, but we have an excavated ulceration instead. The patient being 43 years of age and presenting all these symptoms, in time might have developed a cachexia and one might easily have been misled by the history unless supplemented by dilatation of the cervix and digital exploration. I would be pleased to have Dr. Hammond point out his method of diagnosis in this case.

Dr. NOBLE: I think this class of cases is of interest from two standpoints; first, the diagnosis, which has been touched upon, and, second, from the standpoint of treatment. In a woman of 43 years of age it is a matter of relatively small importance whether hysterectomy is done or the tumor removed. In a younger woman cases of this kind can be well treated by removing the fibroid and leaving the uterus. I have removed a goodly number of them, and with one exception they have made good recoveries. One patient in which a sloughing fibroid had been extruded into the vagina, some two or three weeks after operation died of embolus. When a tumor is located as this one at the head of the fundus, and the cervix is not dilated, it is difficult to enucleate it; but by splitting the cervix and using the bullet forceps I have succeeded in the enucleation.

Dr. JOHN C. DACOSTA: I think Dr. Hammond was very fortunate in his diagnosis in this case. Considering the shape of the uterus and

of the fibroid, I do not think the suggestion of dilating the cervix and pulling the fibroid down of much value. You would need first to dilate the vagina, then dilate the cervix to the extent of three fingers in width before you could begin to enucleate the fibroid. Taking into consideration the narrowness of the vagina; in this case the age of the woman; the hæmorrhage; and the liability of the fibres to slough and undergo sarcomatous change, I think he did the proper thing in doing a hysterectomy. In a tumor of that kind the percentage of mortality in a man who knows how to do a hysterectomy is not as great as in attempting enucleation.

Dr. HAMMOND: The woman is 43 years of age, and she has the family history of mother having died from uterine carcinoma. The patient was examined under an anæsthetic. There was a very fat abdominal wall. In making an examination I was able to outline the uterus; the cervix was perfectly healthy. The whole tumor was completely enclosed in the uterine cavity. The uterus felt like one smooth, hard mass under bimanual examination. Then, again, the length of time which the patient has suffered was taken into consideration.

Any attempt to do a vaginal operation would have been a very difficult procedure, especially so on account of the patient being nulliparous. Having made the diagnosis of fibroid, the best operative procedure was supravaginal hysterectomy, which was done. To have done a myomectomy through the vagina would have been impossible, and any attempts to do so would simply have pulled the whole fundus in.

Official Transactions.

FRANK W. TALLEY, *Secretary.*

TRANSACTIONS OF THE PERIODICAL INTERNATIONAL
CONGRESS OF GYNÆCOLOGY AND OBSTETRICS.

Third Session, Amsterdam—Aug. 8-12, 1899.

(Continued.)

ON THE CHANGES IN THE PELVIC MEASUREMENTS DE-
PENDENT UPON DIFFERENT POSITIONS OF THE
BODY.

BY PROFESSOR LEBEDEFF AND DR. P. BARTOSZEWICZ (ST. PETERSBURG).

(Translated and abstracted for this JOURNAL.)

Attempts have been made, by measurements upon the living and upon the dead, to investigate the subject of the changes in the pelvic measurements dependent upon different positions of the body, especially with reference to women in childbirth. Measurements upon cadavers have been made by VON WALCHER, KLEIN, VARNIER, VON KUTTNER and PINZANI; VON WALCHER'S were upon one case—a woman dead in childbirth; KLEIN'S list does not include a single puerperal case. The latter designed two special instruments, one for the conjugata vera and transverse diameter, the other for the conjugata diagonalis.

Our cases were cadavers, measured by KLEIN'S system, in three different positions: VON WALCHER'S, the horizontal, and a position in which the legs were flexed as much as possible, but without the employment of great force, upon the pelvis. VON WALCHER'S position we will designate W., the horizontal, H., and the third position, L. The conjugata vera, conjugata diagonalis and direct diameter of the pelvic strait were measured. The measurements were made as soon as rigor mortis had passed. The subjects were 25 women and 2 children. Of the former, 9 were nulliparæ, 2 had borne children, and 5 had died in the puerperium; of the latter, one had been confined in the eighth month, died twenty hours later and was examined on the third day, two were examined within a week after childbirth, and the fourth and fifth half a week after labor. Of the children, one was a new-born boy,

the other a two-year-old girl. In the following table the variations of the measurements in the different positions are listed :

C. VERA.		C. DIAGONALIS.		DIRECT DIAMETER OF THE PELVIC STRAIT.		
W—H	W—L	W—H	W—L	W—H	W—L	
CTM.	CTM.	CTM.	CTM.	CTM.	CTM.	
0.1	0.3	0.1	0.4	0.33	0.65	Average for 9 nulliparae. Women just delivered. Pregnant in 8th month. Puerperal.
0.11	0.34	0.12	0.4	0.2	0.64	
0.05	0.4	0.2	0.5	0.5	0.7	
0.	0.1	0.1	0.5	0.7	0.8	
0.1	0.6	0.2	0.6	0.1	0.9	
0.1	0.4	0.2	0.5	0.3	1.0	"
0.1	0.7	0.05	0.6	0.2	0.7	"
0.	0.1	—	—	—	—	New-born boy. 2-year-old girl.
0.15	0.5	0.1	0.45	—	—	

THE SAME MEASUREMENTS ACCORDING TO OTHER AUTHORS.

C. VERA.		C. DIAGONALIS.		DIRECT DIAMETER OF THE PELVIC STRAIT.		
W—H	W—L	W—H	W—L	W—H	W—L	
CTM.	CTM.	CTM.	CTM.	CTM.	CTM.	
0.1	0.53	0.13	0.4	—	—	Average of 20 female cada- vers (KLEIN). Average of 9 puerperal cadavers (VARNIER). Average of 3 puerperal cadavers (KUTTNER).
0.16	—	—	—	—	—	
0.42	1.1	—	—	0.73	0.73	

PINZANI's figures we unfortunately do not know.

From our investigations, we reach the following conclusions :

(1) In VON WALCHER's hanging position the conjugata vera is greater than in the horizontal position ; the difference varies between 1 and 3 millimeters.

(2) In position L. the conjugata vera is shortest ; the minimum of the difference, W—L, is 0.1, the maximum, 0.7 cm.

(3) The variations in the difference of the conjugata diagonalis correspond in general to those of the conjugata vera.

(4) A marked shortening of the conjugata vera was in general ob-

served as soon as the pelvis was compressed by flexion of the lower extremities.

(5) In the direct diameter of the pelvic strait we observed in W, H, L greater variations than in the conjugata vera and these variations were in the opposite direction: in W this diameter was the shortest, in L the longest; the minimum of the difference was $W-L = -0.3$ cm., the maximum = -1.1 cm.

(6) The cadavers of the multiparæ of the recently delivered woman and of the woman in childbirth showed no especially marked difference in the varying values of the conjugata vera, conjugata diagonalis and direct diameter of the pelvic strait.

ABSTRACTS.

This Department is in Charge of the Following Staff of Sub-Editors:
DR. T. W. CLEAVELAND, DR. G. H. MALLET, DR. A. D. CHAFFER

PÆDIATRICS.

UNITED STATES.

The Treatment of Chronic Eczema at the Babies' Wards.

HENRY DWIGHT CHAPIN (*Post-Grad.*, September, 1899) protests against the inefficient treatment usually applied to chronic eczema, where the mother frequently washes the child with soap and water, the ointments are applied without first cleaning off the dried exudations, and when applied are quickly rubbed off by the hands or clothing. To soften the exudation the part may be wrapped in lint which has been soaked in bichloride (1-10,000) or carbolic acid (1-100) and the whole surrounded by oiled silk. After twelve hours the exudate may usually be rubbed off by pledgets of cotton soaked in oil or vaseline. Sweet oil may be used in the same way as the bichloride or carbolic acid; the latter, in fact, should not be used where the disease occupies a large surface. Lassar's paste, containing one part of salicylic acid in one hundred, perhaps of half strength for very young infants, is rubbed into the skin and the part covered with a bandage, or, if the face, with a mask. Once a day the skin is thoroughly cleansed with cotton and vaseline, and the dressing renewed. The treatment can be perfectly well applied to the whole body.

Two Epidemics of Alopecia Areata in an Asylum for Girls.

JOHN T. BOWEN (*Jour. of Cut. and Gen.-Urin. Dis.*, September, 1899) ascribes two successive epidemics of alopecia areata to a girl of eleven years. At the time of the first she had been an inmate of the asylum for eight years, when she was discovered to have several spots of typical alopecia areata, and a few weeks later another girl was found to be similarly affected; still four months afterward, it was discovered that sixty-three of the sixty-nine inmates were more or less affected. Some cases were typical, but the epidemic

was characterized by the small size and irregular, angular and linear form of the bald areas; improvement was noted in two months, and after six months only a few bald patches could be found. Three years later the girl from whom the trouble originated went to live in a private family; if any bald patch existed then it must have been very small, but the husband of the woman with whom she lived soon after developed several bald patches, which healed again without treatment. Three years later, six years after the first epidemic, the girl returned to the asylum, but it is not known whether she had any traces of the disease. In about two months bald patches were observed on the head of another girl, and in six months twenty-six of the forty-five girls were affected, only four having been inmates of the asylum at the previous epidemic. The girl herself showed several large areas, but none of the others presented the characteristic form, the lesions being small, dotted, elongated, sometimes with a cicatricial appearance. Six months later only one child was found with bald patches, and there have been no later developments. A piece of the scalp from the first girl's head was excised and examined microscopically. The most prominent feature was the great atrophy of the pilo-sebaceous follicles; from the cells of the sebaceous glands many of the nuclei had disappeared, sometimes the cells themselves being merged into a granular mass; sometimes the center of the gland was a mere cavity; the hair follicles were atrophied and mostly empty, some of them containing a portion of the hair-root or a mass of horny matter. The corium showed a moderate increase of connective tissue cells, and large numbers of mast cells were found about the walls of the vessels. No micro-organisms could be discovered. In all the cases *tinea trichophytina* was carefully excluded.

Such epidemics have been described by French dermatologists, but the writer is unaware of any that has been encountered in this country. The cause of alopecia areata is, of course, unknown; these cases it seems necessary to call by that name, though in many the lesions were peculiar, and it also seems necessary to admit their infectious character.

Sarcoma of Kidney in an Infant; Recovery after Nephrectomy.

ROBERT ABBE (*Ann. of Surg.*, September, 1899) reports the case of a child with a congenital tumor on the right side of the abdomen, which grew with the growth of the child. Operation was proposed several times, but deferred till the child should be stronger. At the age of eight months it was determined upon. The child then weighed fifteen

pounds, and appeared wrinkled and old; the tumor filling three-quarters of the distended abdomen, springing from the left loin and crowding the colon far to the right of the median line. The success of the operation the writer especially ascribes to (1) a particularly warm room; (2) a heavy, thickly-padded ironing-board, kept hot till the child was secured to it with bandages; (3) wrapping the extremities well in cotton and flannel, and keeping the uncovered parts warm with relays of steaming towels; (4) the loss of not more than an ounce of blood during operation. Median incision above the navel showed the peritoneum pushed to the right of the median line; from this a cross cut to the left was made, and the growth separated from the abdominal wall by blunt dissection; the colon, being spread out upon the surface of the growth, had to be separated with much care; the vascular pedicle was isolated, separated from the ureter, tied, and the ureter tied off close to the bladder, then the abdominal wall closed in tiers. The removal of the tumor was clean, no glands or extension being discovered; the other kidney appeared normal on palpation. Convalescence was uneventful, the other kidney in ten days secreting more than a normal amount for the two organs; the child quickly gained color and flesh (six and a half pounds in three months) and became as well as its sisters.

The tumor was found to weigh four pounds; on its surface were two large, flattened and separated portions of kidney tissue, which, on section, were found distended with white tumor tissue; the color of the tumor on fresh section was chiefly white, interspersed with gray, flesh-colored or mottled masses; it contained many small and large cysts, filled with thin, straw-colored, albuminous fluid. The pathological examination showed that the tumor involved the entire kidney and was enclosed in the capsule, portions of the latter being recognizable upon its periphery; the central parts of the growth were a combination of soft, fibrous material, interspersed with a soft, vascular substance, which had in places formed degeneration cysts filled with blood and debris. The pelvis was filled with the new growth. Microscopically, traces of renal parenchyma were found near the periphery of the growth. The rest was pure spindle-celled sarcoma. The darker portions were very vascular areas, and the cysts were lined with epithelial cells, many of which contained blood pigment; some of the larger ones had no lining membrane, being bordered only with the spindle-cells. The tumor's histological origin is somewhat undetermined; the capsule being free would exclude that site, while, on the other hand, the pelvis is still visible in places and the main growth seems to lie between the

two. In earlier specimens spindle-celled sarcomata have been observed growing from the intertubular connective tissue, and such was the probability in this case.

Belladonna in the Broncho-Pneumonias of Children.

D. A. HODGHEAD (*Pediatrics*, September 15, 1899) saw a baby, eighteen months old, ill for three days with broncho-pneumonia. The case was serious, with coarse râles all over the chest, areas of consolidation, labored breathing, incessant cough, and rattling in the tubes which could be heard several feet away; the usual treatment, internal and external, was instituted, but at the end of thirty-six hours all the symptoms had increased in intensity, and the child was much weaker. The former medicines and poultices were withdrawn; the child was wrapped in soft, loose clothing, water substituted for milk, one-tenth grain of calomel given every hour till the bowels moved freely; while at the alternate half-hours two drops of tincture of belladonna were administered. Improvement was noted in twelve hours, and at the end of twenty-four hours the temperature had fallen to 100° and the respirations to thirty-five; the latter were deeper and less laborious, the coarse râles few, the pulse stronger, the cough less frequent, and the child slept and took nourishment. The belladonna was continued in drop doses every two or three hours till the rash was well marked over the whole body; the child made an uninterrupted recovery.

A series of experiments was then begun, and the treatment carried out in twenty-five of the writer's cases and five of other physicians. Nothing original is claimed for the calomel, but the writer has been unable to find any reference to the use of belladonna in this disease. Its physiological action would seem to be what is desirable: (1) it is mildly narcotic, making the child less irritable and uncomfortable; (2) in small doses it is a heart tonic, raising arterial tension, depressing the pneumogastric and stimulating the cardiac sympathetic; (3) it is a respiratory stimulant, influencing the diaphragm and especially the accessory respiratory muscles; (4) it dilates the superficial capillaries and so relieves the congested lungs; (5) most important of all, it diminishes secretion in the bronchial tubes and pulmonary tissues, overcoming or preventing the water-logged condition of the lungs and averting the threatened asphyxia. To be effective the drug must be administered in quite large doses every hour or two hours till its effect is produced. The writer has never observed untoward symptoms, but has not found it very ef-

fective in the early stages, when the bronchial mucous membrane is dry and congested. The writer admits that thirty cases do not establish belladonna as a specific, but of these thirty cases only two died, giving a mortality of less than 10 per cent.

Treatment of Chronic Croup.

EDWIN ROSENTHAL (*Jour. of the Amer. Med. Assoc.*, September 16, 1899) notes many instances of recurring post-diphtheritic stenosis in cases not subjected to intubation, as well as in those in which this measure has been practised. In even the latter class injury to the larynx can be generally excluded, and irritation from the tube is much less than in pre-antitoxin times when it had to be worn so much longer. An illustrative case, three years old, showed on bacteriological examination both the Klebs-Loeffler bacillus and the streptococcus. Antitoxin was administered, and all visible traces of the disease disappeared. A few days later the patient had a croupy cough and developed symptoms of stenosis, somewhat relieved by another injection of antitoxin. In about a month the same symptoms reappeared as severe as ever, when examination showed absence of the Klebs-Loeffler bacillus, but still the presence of streptococci. Ten c.c. of antistreptococcic serum were then injected, with complete disappearance of all the symptoms three days later. That the streptococcus may produce "croup" is well known, and it is fair to infer that many cases similar to the above owe their symptoms to this germ, which so often complicates diphtheria. Another cause of "chronic croup" may be the too persistent use of hydrogen peroxide, but this can be excluded in the writer's cases. He has now had several cases like the above, treated in the same way, with the most gratifying results.

His procedure, when called to a case of croup, is to immediately use antitoxin; the bacteriological test is then made, and if streptococci be discovered, an injection of antistreptococcic serum is made, and the antitoxin continued; unless only streptococci are found, when the serum is used instead. With the serum we begin with a large dose, to be followed by smaller ones; duration of the disease is the same as with antitoxin, and we may note evidence of a cure on the third day. The serum is as free from danger as the antitoxin, though subject to the same sequelæ; it should be used in all cases where examination shows the specific germ, whether diphtheria bacilli be present or not.

Home Modification of Cows' Milk for Infant Feeding.

HENRY DWIGHT CHAPIN (*N. Y. Med. Jour.*, November 4, 1899) says that in the modification of cows' milk for infant feeding our aims should be a fairly accurate method of obtaining proper percentages and a method of reducing the ingredients as nearly as possible to their condition as found in woman's milk. Regarding the former desideratum, the fault to be found with the schemes hitherto recommended is that they are beyond the reach of ordinary people under ordinary conditions; and the aim of the present paper is to present a method at once not too complicated and sufficiently accurate.

The writer has investigated the conditions of the milk trade in New York with great pains. There seems to be a fair grade of uniformity in the milk supplied by the better dealers, many of whom guarantee their milk to run at least 4 per cent. of fat. Generally the milk is obtained by the dealers from companies that buy direct from farmers and dairies, the latter, however, being under careful inspection and control by the companies. For shipment, milk should be aerated, strained and cooled to 45° F., aeration removing the gases and cooling checking the development of lactic acid germs. Milk bottled in this manner and kept at a temperature of 45° F. should keep for sixty hours.

Van Slyke has found, after many investigations, that the percentage of casein increases in a nearly constant ratio with the increase in the percentage of fat. It is also found that the percentage of fat in the milk of a mixed herd rarely falls below 3 or exceeds 5½ per cent., so that it is safe to assume 4 per cent. as a general average.

When milk is bottled in the country and kept cool for a number of hours before delivery it is practically subjected to the "deep-setting" process, and forms a layer of cream from three to four inches thick, whose percentage of fat decreases inversely as the depth. Various tests were made, which showed that handling and transportation of the milk subsequent to proper bottling and cooling disturbed the cream very little, so that we may assume that when the bottle is delivered to the consumer the "deep-setting" process has practically taken place; and that unless the creamy layer is distinct the bottling has not been done in the country, a circumstance which also increases the danger of contamination.

The writer's device takes advantage of this natural separation of the milk; it consists of a dipper, cylindrical in shape and of small enough diameter to fit the mouth of any milk-bottle; the dipper is filled for the first time with a spoon to avoid an overflow from the bottle; the suc-

cessive ounces are then removed by simply letting the dipper down into the bottle. Now the proteids nearly equal the fats up to $4\frac{1}{2}$ per cent.; therefore a 12 per cent. cream would contain about three times as much fat as proteid; an 8 per cent. about twice as much, and so on; so that almost any desired percentages can be obtained by using creams that contain the desired ratio between fat and proteid. The problem consists merely in mixing the rich top milk with the poor bottom milk in such a way as to reduce the percentage of fat to the desired point. Practically 12 and 8 per cent. creams are found to be the most useful; practically, also, it is found impossible to completely separate all the fat from a quart of milk; therefore, when we wish to have three times as much fat as proteids we get a 12 per cent. fat cream by taking the first nine ounces of cream and mixing it together, with the result that we possess a fluid containing 12 per cent. fat, 4 per cent. proteid, and 5 per cent. sugar, a basis for any food containing fat three times the proteids, the following formula being used:

Dilution of 12 per cent. cream = 12 per cent. divided by desired percentage of fat. *Fluid ounces 12 per cent. cream* = desired fluid ounces food divided by dilution. *Sugar* = desired fluid ounces food divided by twenty. *Diluent* = desired fluid ounces food minus fluid ounces 12 per cent. cream. Suppose we wish a 24-ounce mixture containing 3 per cent. fat, 1 per cent. proteid, and 6 per cent. sugar; we find by these formulæ that the cream must be diluted four times, that we take 6 fluid ounces of it, and add 1 1-5 ounces of sugar and 18 ounces of diluent. If we wish the fat twice the proteid, we take the first sixteen dipperfuls from the bottle, with a resulting fluid that contains 8 per cent. fat, 4 per cent. proteid, and 5 per cent. sugar. If we wish forty ounces of a 4-7-2 milk, by applying the same formula we find that the cream must be diluted twice, and that twenty ounces of it must be taken, together with two ounces of sugar and twenty ounces of diluent.

Such a modification is believed to be sufficiently accurate; the strength of the milk can be easily varied by directing the number of ounces to be dipped out of the bottled milk. Regarding the sugar, as food made by diluting the cream four times will contain about 1 per cent. sugar, and by diluting twice about 2 per cent. sugar, it is perceived that it is necessary to add 5 per cent. more or one-twentieth the number of ounces of food. A heaping dipperful of granulated sugar weighs an ounce, a dipperful and a half of milk sugar approximately the same.

We now come to the second point—to get the milk into the same physical condition as mother's milk. It is well-known that the quantity of casein coagulable by acids is greater in cows' milk than in human

milk; we must, however, not confuse its precipitation by an acid with its coagulation with rennet. The latter changes casein into a semi-fibrous mass that has a strong tendency to contract and harden, especially on the outside; its action is much accelerated by lactic acid, and fails entirely in the absence of the salts of lime. Therefore dialyzed milk, or boiled or Pasteurized milk, in which the albumin is coagulated and seems to envelop the lime salts, does not coagulate well with rennet; on the addition of lime water and a little salt, however, rennet again acts with ease; and this appears to be the beneficial effect of lime water rather than neutralization of the lactic acid by its feeble alkalinity.

With plain gruels and milk rennet forms rather gelatinous curds; acted upon by iodine they become blue, but on being broken open the blue is seen not to extend into their interior, while the absence of yellow coloration shows that the proteids are unacted upon. If now the starch be dextrinized, a curd is formed that falls easily apart and which is colored yellow with iodine, showing that a larger surface of proteids has been exposed. The reason is that in the dextrinized gruel much of the starch has been converted into soluble sugar, leaving the gruel largely composed of the cell-walls of the cereal; the cellulose being very flocculent tends to prevent contraction of the curd, which, from the little adhesive material present, tends to fall apart very easily. Another advantage, theoretical at least, is that dextrin promotes the secretion of pepsin; while fermenting starch might completely derange digestion, inasmuch as trypsin is totally inhibited by even .05 per cent. of lactic acid. For dextrinizing the starch of the chosen cereal most of the commercial malt extracts are sufficiently active; but it is better to use a preparation of the diatase itself, either one of those on the market. or a decoction made at home. The latter is prepared as follows: a tablespoonful of malted barley grains is crushed, put in a cup with enough cold water to cover it and allowed to stand over night in a refrigerator; in the morning about a tablespoonful of water can be strained off, which is ready for use and is sufficient to dextrinize a pint of gruel in ten or fifteen minutes.

GREAT BRITAIN.

The Cause of Cough in Children, with Special Reference to Practical Treatment.

J. PORTER PARKINSON (*Brit. Med. Jour.*, August 19, 1899) has collected a series of 700 consecutive cases of cough in children between the ages of six months and twelve years, in all of which the chest was carefully examined. He found as the cause acute or chronic enlargement of the tonsils in 170 cases, varying degrees of bronchitis in 143, constipation in 69, gastro-enteritis in 58, well-marked adenoids in 58, pharyngitis in 51, worms, chiefly thread worms, in 30, tuberculosis of lungs in 29, rickets in 23, whooping-cough in 23, acute pneumonia in 18, bronchopneumonia in 11, simple dry pleurisy in 8, laryngismus stridulus in 3, laryngitis in 2; while 12 were mixed cases, including pleural effusions or adhesions, lymphadenoma, carious teeth, etc. Thus 30 per cent. were due to chest disease, 40 per cent. to throat disease, 23 per cent. to gastro-intestinal disease, and 6 per cent. to other causes.

The commonest cause of throat cough is enlargement of the tonsils, generally accompanied by some inflammation and often pharyngitis; an occasional rhonchus may be heard in the lungs and give rise to a diagnosis of bronchitis; it is due, probably, to engorgement of the heart from the severe cough. If the tonsils be chronically enlarged the only efficient treatment is their removal. Well-marked adenoids, producing symptoms, were present in about 8 per cent. of the cases; in such the cough is often followed by vomiting and epistaxis, and deafness and otitis media may occur; removal is usually the only remedy, though a course of tonics and an intranasal injection may be tried. Pharyngitis, if by itself, yields to tonics and an astringent gargle or application.

Of the coughs due to the various lung diseases, it is important to note that that due to bronchiectasis or enlarged mediastinal glands may exactly simulate that of whooping-cough and is no doubt frequently mistaken for the latter. As diagnostic points we may find that the child has previously had whooping-cough; we may find clubbing of the fingers, cyanosis, deformity or dullness of the chest, and occasional râles; the sputum is often offensive, and may be coughed up in large quantities at considerable intervals. The same symptoms may be produced by enlarged, generally tuberculous, glands; or both conditions

may be present, as in a case seen by the writer and confirmed by autopsy.

Especially important are those cases in which the cough is due to some gastro-intestinal disease; in many of these the cough had been so marked that they had been previously treated for that alone without benefit; of course, a real bronchitis often complicates diarrhoea, but such cases can be readily determined by physical examination. In the remaining 6 per cent. rickets was frequent, and several cases recovered only after the extraction of carious teeth. Ear troubles have not been mentioned because in all the writer's cases of this class there was sufficient throat trouble to explain the cough.

Some Details in the Treatment of Acute Intussusception in Infants.

H. STANSFIELD COLLIER (*Lancet*, August 26, 1899) emphasizes the fact that the most potent cause of the high mortality of intussusception in infants is failure to recognize sufficiently early the nature of the trouble, the child during the early hours having a lusty cry and not looking particularly ill. As regards treatment, if that by rectal injection be chosen, chloroform should be given and a tube and funnel be used, the surface of the fluid being not more than two feet higher than the level of the child's abdomen. The bowel may also be inflated with air, and an injection subsequently be given. Afterwards a careful bimanual examination for unreduced bowel should be made. With these methods, however, there is often a deceptive lull in the symptoms, with a later recurrence ascribed to a return of the intussusception; it seems doubtful whether the reduction ever really took place, as the writer has not heard of a case in which intussusception returned after reduction through an incision. The usual treatment through abdominal incision has been attended with a high mortality, due, the writer thinks, to the excessive and prolonged exposure and manipulation of the bowel. He recommends treatment by the combined method. The first case, seven months old, with symptoms of sixty hours' duration, was put under chloroform, and water injected into the rectum; the tumor was felt to descend beneath the right rectus; after keeping up the pressure for several minutes, the irrigator was lowered and a small longitudinal cut made over the tumor, large enough to admit the index finger; the irrigator was then raised, and by gentle manipulation the remaining part of the bowel was squeezed out; the operation was very brief, there

was very little shock, and the child recovered. Two other cases, one of them not the writer's, have been operated upon in the same manner, with the same ease, and with equally good results.

On the Pathology of Acute Chorea.

H. CAMPBELL THOMPSON (*Clin. Jour.*, September 13, 1899) reports a pathological examination of a case of acute chorea of eighteen days' duration; the movements had begun in the arms but in two weeks had affected the whole body, being so violent as to be relieved only by inhalations of chloroform and to make it almost impossible for the patient to take food; the day before death obstinate vomiting set in; the patient became exhausted and her movements somewhat less violent, the temperature rose to 104°, and death ensued.

The post-mortem showed hyperæmia of the brain and cord and a few minute hæmorrhages into the white matter of the brain; the heart showed a recent acute inflammation of the endocardium. Cultures from the inflamed valve, bacteriological examination of the valve and attempts to obtain micro-organisms from the living blood were all negative. The brain was examined by different methods; stained with methyl blue, many of the pyramidal cells showed a slight loss of chromatophile substance at their peripheries, and some of the cells were swollen and altered in shape; with the silver nitrate method some varicosities were found on some of the dendrons, but were decided to be artificial. Sections of the heart and kidneys were stained with osmic acid, but no fatty changes, analagous to those observed by Dr. Mott in patients dying of prolonged epileptiform convulsions, could be made out. The heart muscle, however, had a blurred appearance, its outlines indistinct and transverse striæ faded, with instead a visible longitudinal striation, while the nuclei stained badly and the muscle itself very unevenly. Brain sections revealed no sign of thrombosis or embolism, but these, when present, are probably effect rather than cause; the same may be said of the hyperæmia.

While it is generally held that chorea is due to some definite toxic substance, there is much difference of opinion concerning the nature of this substance. Many facts favor its infectious origin, but the causal relationship of fright and mental shock, as well as the extreme differences of the intensity and chronicity of the symptoms in different cases, favor rather some individual cause. Supposing the disease due to a toxin, whether of bacterial origin or not, we must still explain the pro-

duction of the characteristic symptoms. All we can say is that the cortex is evidently the seat of the motor disturbance; the changes, however, that have been described have been found in other diseases, so cannot be regarded as the direct and only cause of the motor symptoms. Swelling of the cell bodies would appear to be fairly constant; it was also found in five cases by Dr. Charlewood Turner, and although some of these cases were complicated with other diseases he concluded that the "more striking nerve-cell lesions were in part due to the nutritive disturbance of the brain which caused the chorea in these patients." The other condition observed, chromatolysis at the margin of some of the cell bodies, is probably an effect, but cannot be regarded as a cause as it occurs under so many other conditions. The function of the chromatophile granules is doubtful; but a case of this kind, dying of nervous exhaustion with a comparatively small loss of these granules, does not support the theory that they are concerned with nutrition and disappear on prolonged exertion. It may also be noted that no brain-cell changes were found which would be supposed incapable of recovery had the patient lived.

OBSTETRICS.

UNITED STATES.

A Case of Labor complicated by Puerperal Convulsions and Smallpox.

WILLIAM HOSKINS, JR. (*Med. Register*, September, 1899) was called by a Health Officer to take charge of a patient who was in labor. The woman was in the pustular stage of smallpox, and had besides been having puerperal convulsions for twenty-four hours. Bromidia, chloral, morphine and atropine were used in the endeavor to control the spasms, but were unavailing. The condition of her heart seemed to forbid the use of chloroform. During the period of stupor following a violent convulsion an examination was made and the os was found to be partly dilated and the membranes ruptured. The os was fully dilated and forceps applied, resulting in the easy delivery of an apparently healthy child, which showed no indications of any eruptive disease, although text-books state that a fœtus in utero often undergoes the various stages of smallpox when the mother is suffering from that disease. The child, however, lived only four hours. The placenta was delivered by Crede's method with but little hæmorrhage. The patient remained unconscious for twenty-four hours but the convulsions ceased and she made an uneventful recovery.

A Peculiar Monstrosity.

R. H. GARTHRIGHT (*Ibid.*) reports a case of a woman who was delivered, after a breech presentation, of a male child weighing six pounds. It breathed a few times and then died. The child was well developed except as to its head. The os frontis extended almost to the upper lip. The spaces where the eyes should have been were firm and smooth, showing no signs of eyes, but about half an inch above the mouth was a short slit, which on being opened, showed an imperfectly developed eye. The mouth was very small, resembling that of a rat, while inside the mouth were a number of small, sharp teeth. The

mother had hydramnios to a marked extent during the latter part of the pregnancy.

A Successful Case of Cesarean Section in Alabama.

B. G. COPELAND (*International Jour. of Surg.*, October, 1899) reports a case of this operation performed on a white woman, twenty-seven years of age, where the conjugate diameter of the pelvis was about two inches, due to an old hip-disease. Her first child had been delivered after craniotomy. Cæsarean section was performed at the hospital about twenty-four hours after the first indications of labor. After the median incision had been made, the uterus was lifted out and surrounded with a large quantity of sterile gauze, then an incision was made from the cervix to the fundus, and the child and after-birth delivered. The spurting of a few vessels was controlled by deep silk sutures down to, but not including, the endometrium. Not a drop of blood or amniotic fluid reached the abdominal cavity, and the wound was closed completely in the usual manner as there was no necessity for drainage. The patient's temperature never rose to 100°, and she left the hospital in twenty days. The child was a vigorous, healthy baby, still living at the age of six months.

Ætiology of Eclampsia.

CHARLES B. REED (*Medicine*, October, 1899) says that it is established that eclampsia occurs only during pregnancy and the puerperium. The large size of the uterus cannot account for it, as increase in size under other conditions, such as fibroids, never produces eclampsia. It seems settled that it is caused by toxin, the nature of which is not fully determined, but which is a metabolic product of either the uterus or placenta, or both conjoined. The foetal origin of the toxin is supported by eminent men, but aside from the difficulty of showing a direct connection with the foetus in utero, it would not explain the cases which originate post-partum. After the death of the foetus *in utero*, or when the living child has been delivered, the danger is diminished if not removed, showing that when the uterine activity is abolished the liability of an attack is lessened. Moreover, the clinical history of eclampsia is that of a toxemia. Zweifel and Schmore proved that multiple thromboses are invariably found post-mortem in the liver, lungs,

and brain, indicating the presence in the circulation of some product of organic change with blood coagulating power. As toxins spend their power largely upon the nervous system, their effects are more perilous to those of nervous organization. Hysteria, epilepsy, neurasthenia, dipsomania, or neuralgias of long standing often precede eclampsia.

Enlargement of the heart, especially of the left ventricle, occurs in pregnancy, reaches its height at labor, and disappears after delivery. If in scarlatina we find vomiting, nervous disturbance, albuminuria, enlargement of the heart, due to the presence of a toxin, why not attribute a similar train of symptoms in pregnancy to a similar cause, *viz.*—some toxin?

Lange's experiments on women and pregnant cats, extending over four years, have demonstrated that a hyperplasia of the thyroid gland is physiological in pregnancy. Pregnant cats require for the maintenance of health larger thyroids than the non-pregnant; after the total extirpation, or the removal of four-fifths of the thyroid gland, tetany occurred in pregnant cats, which was relieved by the administration of thyroidin. In the examination of 133 pregnant women, there was thyroid enlargement at some period of pregnancy in all but twenty-five, and three of these were doubtful. In eighteen cases with no enlargement of the gland there existed "pregnancy kidney" and albuminuria; six cases terminated in eclampsia, and in four others there were severe headaches and other premonitory symptoms of eclampsia.

The function of the thyroid is to regulate metabolism, and the product of the increased activity of the hyperplastic thyroid gland would thus tend to neutralize the uterine or placental metabolic products. But where, for some reason, no enlargement occurs the insufficient production of thyroidin permits the circulation through the blood of these toxic products. A large portion of these toxins are absorbed by the kidneys, and if in too large amount to be eliminated, albuminuria and the kidney of pregnancy occur.

Where from insufficiency of thyroidin a gradual accumulation of toxic material occurs, symptoms of toxemia slowly appear. Vomiting is the most frequent symptom and may be the only one. In other cases the system becomes surcharged, and some incident suddenly precipitates eclampsia or premature labor.

In pregnancy eclampsia is most common from the seventh to the ninth month. Enlargement of the thyroid usually appears about the sixth month in primiparæ, and about the fifth month in multiparæ, thus anticipating the possibility of attack. But the greater number of at-

tacks of eclampsia occur at the end of pregnancy when uterine metabolism is at its height.

Cases of eclampsia occurring post-partum may be due to involution and consequent increase in the system of cell products, or the toxic products of uterine metabolism locked up in the cells of the uterus may be released by involution, or suddenly by labor, and thrown in unmanageable quantities upon the system.

Hernia of the Pregnant Uterus.

W. V. ANDERSON (*Med. News*, October 28, 1899) says that frequent mention is made in text-books of the fact that the recti muscles may separate, allowing the gravid uterus to carry the attenuated aponeurosis before it and thus form a hernia, the uterus being the herniated part, yet no mention is made of the part this condition of things would play at the actual time of confinement.

This condition is more common in multiparæ, where the pregnancies have followed each other in rapid succession. It amounts to an anteversion of the pregnant uterus, and in extreme cases the fundus may descend almost to the knees. The pressure produces œdema, vesical tenesmus, and pain in the distended cutaneous tissue. Reposition of the uterus and the application of a suitable bandage will usually relieve these symptoms. The writer was called in consultation to see a Polish woman, the mother of ten children, who had been in labor thirty-six hours under the care of a midwife. The patient was suffering from a uterine hernia, the pear-shaped mass, suspended by its cervical attachments, reaching almost to her knees. It was movable, and the os was fully dilated. The position of the uterus rendered the uterine contractions ineffective. The patient made a vigorous effort to help herself at each contraction, and the uterus would rise until its long diameter was at a right angle to the body, but the greater the effort the more it interfered with delivery. The woman was anæsthetized, the uterus inverted and held in place by an assistant, forceps were applied, and the child delivered without difficulty. Two days after delivery the abdominal muscles were still so relaxed that they lay in rolls on either side of the abdomen, and so prominent that the fingers could be slipped under them, the skin being also relaxed. Three months later they had contracted so as to occasion no inconvenience.

A Short Umbilical Cord as a Cause of Dystocia.

SAMUEL M. BRICKNER (*Amer. Jour. of the Med. Sciences*, November, 1899) says that the effect is the same whether the shortening is inherent to the cord, or due to its being wound around the foetus. The cord may vary in length from two inches to several feet. To be a factor in the delay of labor the cord must actually be so short, measured from the umbilicus to its placental insertion, that the foetus cannot be born without one of several accidents being likely to happen. These may be:

- (1.) Rupture of the cord at any point along its course.
- (2.) Detachment of the placenta.
- (3.) Inversion of the uterus.
- (4.) Umbilical hernia in the child.

The tensile strength of the cord, and the amount of the expulsive forces must be relatively considered. Careful observers have found that the average cord breaks under a strain of from eight to nine pounds, while the force of the uterine contractions during expulsive pains has been computed as being about forty pounds. It is evident, therefore, that the cord must be long enough during birth to allow the umbilicus of the child to reach, at least slightly, beyond the vulva. The average length of the parturient canal being about $8\frac{3}{4}$ inches, the limit of safety in the length of the cord would be at least 10 inches. The location of the placenta is vital in estimating the necessary length of the cord. When the placenta lies low in the uterus a much shorter cord will permit of an easy delivery than where the attachment of the placenta is at the fundus.

The symptoms, or diagnostic points, in the order of their importance are as follows:

1. *Recession of the head in the interval of pain.* In uncomplicated cases there is always recession of the head after each uterine contraction, but where there is added the elastic pull of an umbilical cord which will not permit the foetus to maintain the advance it has made, the recession will be so rapid and so persistent as to become a striking feature in the case.

2. *Arterial bleeding during and between uterine contractions.* Bleeding during labor, when not due to placenta prævia, a torn cervix or vagina, always directs suspicion to the placenta, and when it is arterial in character, and persists between the pains, and is accompanied by the preceding symptom, it is usually due to a short cord.

3. *Urination in small quantities in the intervals between pains after the establishment of the second stage.* This symptom does not appear to have been recorded by other observers, but in the case occurring in the writer's experience it was most marked. A study of the anatomy of the parts at this stage of labor will show the significance of this symptom. In normal cases at this stage the bladder is pressed against the symphysis, while the urethra is compressed and elongated. Catheterization is difficult, and spontaneous urination almost impossible. But when the uterine contraction subsided in the case above mentioned, the short cord was sufficiently strong to draw back the body, and with it, of course, the head. The bladder could then fall forward and empty itself, being stimulated to the act by its frequent compression.

4. *Pain over the placental site, especially during a uterine contraction, or during the application of forceps.* This naturally results from the traction on the short cord. Even depression of the placental area has been noted by some writers. Partial or complete separation of the placenta must occur where the cord is very short, unless the cord breaks. In the writer's case the placenta was evidently separated, as it came away easily soon after the birth of the child, and its maternal surface was covered with a large, thick clot. This condition explains the arterial bleeding during labor.

5. *A desire of the patient to sit up.* Much stress is laid on this point by King, who has reported a number of these cases.

6. *Uterine inertia.* While these symptoms are suspicious, diagnosis of a short cord cannot be made with certainty until the birth of the child as far as the umbilicus. Where the child presents by the breech, the cord may be tied and severed as soon as the umbilicus is delivered. Denman and King recommend that the mother assume a squatting or kneeling posture. Pressing the foetus down so that the placental insertion of the cord is brought nearer its umbilical insertion may somewhat obviate the danger of rupture, but this procedure is not always possible. Forceps are contraindicated, as their use would probably result fatally to the child.

In the case reported by the writer the cord measured $10\frac{1}{2}$ inches, and the child suffered from an umbilical hernia.

Tubal Pregnancy and Dermoid Cysts.

I. B. PERKINS (*Med. News*, Nov. 4, 1899) reports a case of dermoid cyst of both ovaries, and pregnancy in the right tube, with almost

complete obliteration of the left tube. The patient's history was as follows:

Mrs. A., aged forty-one years, menstruated for the first time when twenty years old. The flow was scanty and did not appear again for three years. At twenty-three she was married, giving birth to a child three years later. She had "child-bed fever," so-called, and was confined to her bed for eight weeks, but there was no history of an abscess. Three years later she had a scanty menstruation, the discharge having a bad odor. When most regular she menstruated only three or four times a year. Seven years ago she had an attack of peritonitis, lasting five weeks. On the 14th of last April a scanty, stringy discharge commenced, lasting for twenty-three days, when she was seized with severe pain in the right side of the abdomen. When first seen she was in a condition of great shock. Extra-uterine pregnancy with rupture was diagnosed and immediate operation advised. She was stimulated with repeated injections of strychnia, and one hypodermic each of ergotin and atropin were administered. She revived somewhat, and before and during the administration of the anæsthetic normal salt solution to the amount of three quarts was injected under the breasts. The uterus was four inches in depth and turned to the left. Curettement brought away considerable shred-like tissue. On opening the abdomen it was found to be filled with dark blood and blood-clots. After washing it out with hot salt solution the patient was placed in the Trendelenburg position. A three-lobed cyst of the left ovary was resting above the right tube and ovary, and firmly adherent to the intestines. The fimbriated end of the left tube was adherent to the cyst, and a small cord, the remains of the tube, was distended at its uterine end with a dark fluid.

On the right side was the ruptured and still bleeding right tube with an unbroken sac, containing a four weeks' fetus depending from it. The cystic right ovary was removed together with the other ovary and tubes. The patient rallied and made a good recovery. The three-lobed cyst of the left ovary contained clear fluid in two lobes, while the third was filled with a fatty substance mixed with hair. In it were also a piece of skin covered with hair and two bones, one a portion of the inferior maxillary containing four teeth. The right ovary was divided into six sections, containing the same fatty material and hair. One contained a small body, shaped like a foetal skull, covered with short hair, with a lock of hair about an inch long in one place. This mass contained lines of gray material resembling brain tissue.

The dermoids were undoubtedly congenital, and the menstrual his-

tory was due to the small portion of ovarian tissue present. The tubal pregnancy was probably due to the contracted tube resulting from a salpingitis at the child-birth fifteen years before, while the destruction of the left tube was due to a twist of the pedicle, shutting off the blood supply of the tumor, which evidently obtained such supply from the intestine to which it was adherent. This twist probably occurred at the time of the peritonitis seven years before.

GREAT BRITAIN.

Right-Sided Paralysis of Gradual Onset occurring during Pregnancy.

ROBERT CRAIK (*The Lancet*, September 30, 1899) reports a case of a primipara, who, when eight months pregnant, complained of numbness and loss of power in her right hand, together with a burning feeling in the hand and fingers. She stated that it had been coming on gradually for about a month. There was slight difficulty, also, in speaking. On examination the grasp of the right hand was found to be very feeble, and sensation was much impaired. Examination of the urine was negative. Ten days later the difficulty in speaking had increased, and the right side of the face looked flat and flabby. There was dribbling of saliva, and deviation of the tongue to the left. The knee-jerk was slightly increased on the right side, and there were troublesome cramps in the right leg and calf, especially at night.

Labor occurred at full term and was tedious, owing to the occipito-posterior position of the child's head. Forceps had to be used. The cramps never recurred after the confinement and there was gradual improvement of the other symptoms, and three months after delivery there was complete recovery. There was no indication of syphilis, lead or alcohol poisoning. The heart and kidneys were normal. The treatment consisted in rest, milk diet and purgatives occasionally.

GERMANY.

One of the Dangers of Incubators.

E. WORMSER (*Centralblatt für Gyn.*, September 23, 1899) wishes to note some of the precautions and dangers that must be considered in the construction and management of incubators. In the first place it is necessary that the temperature should be uniform and not too high. One often finds the infants bathed in sweat when the temperature is but a trifle over the usual 30° C. The larger the incubator and water-bath and the greater the quantity of water, the more difficult it is to regulate the temperature; but every apparatus should be supplied with means for preventing variations consequent upon change in the gas pressure and outside temperature. A second point is the ventilation. In spite of the openings in the cover the air is not good, the chief fault being in the restricted size of the apparatus by which the cubic air space is reduced to a minimum. The writer calculates that the incubator at the Basel clinic, designed to accommodate six infants, allows to each child only a tenth part of the cubic air space that hygiene prescribes for an adult. Good nourishment (mother's milk) and the utmost care and attention are essential. But that in spite of all these disadvantages much can be done daily experience teaches us; the smallest child treated in this way at the clinic weighed 1170 gm. when put into the incubator, and in forty days had reached a weight of 2000 gm.

The serious danger which gave rise to this paper is that of choking from vomiting. A premature child was being fed every two hours from the bottle, the mother having no milk; it received its last feeding twenty-four hours after birth; when the nurse went to give the next nourishment the child was found dead; it was cyanotic and had vomited. At the post-mortem milk was found in the trachea and large bronchi. The occurrence could be credited to the incubator; for had the child been in a crib the coughing, which must have been caused, would have been observed by the nurse. From the degree of post-mortem rigidity it was evident that death must have occurred two hours previously, directly after the last nursing. For the avoidance of similar accidents it would be wise not to return the child to the incubator immediately after nursing, but only after any eructations or regurgitation of the excess of milk shall have ceased; while redoubled watchfulness must be employed at all times to guard against this rare but most unfortunate accident.

Should Perforation always be combined with Extraction?

W. ZANGEMEISTER (*Centralblatt für Gyn.*, October 7, 1899) says that in Germany it is usual to combine extraction by the cranioclast with perforation, even delaying perforation till such time as it can be immediately followed by extraction. The writer believes, however, that extraction should follow only when necessary and that in not a few cases perforation alone serves every purpose. In only two text-books has he found specific discussions upon this point: Schröder says that after perforation the case may be left to nature providing there are no indications for haste; while Spiegelberg advises that extraction should always follow immediately. The latter's reasons are that (1) the expulsive power is often insufficient to deliver the head, either because the latter has not been rendered compressible enough by the perforation, or on account of its position, or because the pains so often cease with the interference; (2) the prolongation of labor can be only disadvantageous because the operation is usually done at a time when the patient has already suffered much, and because the mutilated foetus rapidly decomposes and gives rise to new dangers to the mother, necessitating later extraction under much more unfavorable circumstances; (3) overriding of the fragments may close the opening, or the latter may be pushed out of the middle of the pelvic canal, necessitating a new perforation when extraction is finally undertaken; (4) extraction, properly done, is not dangerous to the mother, and is the less so the earlier it is performed.

The writer concurs with Schröder and would go yet farther in separating the two operations. It is true that in the majority of cases perforation is done at a time when it is best to follow it by extraction. But in many cases in which perforation is not commonly done, the operation could be performed with benefit and expulsion be left to nature. In other cases one may perforate much earlier than is usual and, so long as the mother is in no danger, wait; dilatation and expulsion go on rapidly, and pains that have ceased often begin again as soon as the diminished head presses upon the cervix.

Further, the writer takes issue with the statement that it is dangerous to wait after opening the head. The danger of decomposition of the brain and consequent infection of the mother seems really to be very slight; the time is not long and whether or not germs develop (if they be not introduced with the incision) is not proven; at all events, the afebrile course of these patients would seem to be against it.

Others allege the danger of vaginal lacerations from the fragments of the skull; but the skull is so compressed by the pains and the edges of the bones so firmly retained in their position in the middle of the canal that lacerations cannot occur, while it is doubtful if extraction does not give rise to more numerous and greater unavoidable lacerations; moreover, the objection fails if a trephine opening be made. In any case, however, if an indication for haste arise, extraction can then be done; and if the opening be lost (as very seldom happens) another can easily be made.

Inasmuch as Fritsch has recommended perforation and cranioclasty in certain cases of placenta previa, in which it has not generally been done, the writer would like to advise that the perforation be performed early, and, when haste is not demanded, the expulsion be left to nature. This would apply to cases of prolapse of a pulseless cord, of placenta previa lateralis and of other head presentations in which the child is surely dead and delivery is not likely to be effected by means of the pains alone. Here, as Fritsch suggests, there is no objection to a destructive operation, which therefore should be performed "as early as possible;" however, if we perforate alone we can do it much earlier. Perforation is here no more dangerous than an examination and does not require narcosis; extraction, on the contrary, requires anæsthesia and results in lacerations, while the cranioclast introduces germs into the cervical region, which is not invaded in perforation. Especially in placenta previa is spontaneous delivery to be preferred, owing to the lesser danger of cervical tears. Perforation by itself has also the great advantage that we can do it early at a time when the cervix is not sufficiently dilated for extraction with the cranioclast. Dilatation goes on rapidly, the pains increase, and many a labor is terminated by this early perforation alone, much more quickly than would have been the case had we waited for dilatation of the cervix enough to permit of cranioclasty.

The disadvantages of extraction, then, consist in the necessity of an anæsthetic; the forcible emptying of the uterus, which leads to trouble in the delivery of the placenta and to atony, and by which new lacerations are made and infectious material introduced into the uterus. Labor left to nature after perforation lasts no longer, while artificial interference is never to be lightly regarded, and cranioclasty much increases the actual dangers.

GYNÆCOLOGY.

UNITED STATES.

Accidental Wounds of the Female Bladder.

FREDERICK HOLME WIGGIN (*Jour. of Amer. Med. Assoc.*, Sept. 9, 1899) says that accidental opening of the bladder in the course of an operation on the pelvic organs has long been considered a serious matter. It was not until 1886 that a successful case of intraperitonæal suture of the bladder was recorded. While many such accidents must occur, the record of those successfully treated is very small.

Injuries to the inferior surface of the bladder generally occur in the course of the separation of the uterus from the bladder-wall during operations per vaginam. A case in point was operated on for ovarian disease, chronic endometritis and interstitial myomata. A vaginal hysterectomy was done by means of an incision along the anterior vaginal wall, beginning about one inch below the meatus urinarius, and carried down to and around the cervix. During the dissection of the right vaginal flap from the bladder there was persistent oozing of blood. Near its junction with the cervix the bladder was opened by accident. The wound was immediately closed by three Lembert sutures of fine silk, taken through the muscular coat only. The wound was disinfected and the operation proceeded as usual. The bladder was catheterized every three hours for several days, after which there was no further trouble.

Injuries to the posterior wall of the bladder are liable to occur in breaking up serious adhesions of pelvic organs or tumors to the bladder and intestines. In removing a large myoma from a patient hæmorrhage occurred from some sinuses on the surface of the tumor, which having rigid walls could not be clamped, therefore, it was necessary to remove the mass rapidly. To do this the anterior attachment of the tumor was clamped and cut, when it was discovered by the escape of urine that the bladder had been opened at the fundus. Previous to this the general cavity had been shut off with gauze pads and the parts thoroughly irrigated. Hydrozone in half strength was used, followed by saline solution. The gauze-pads were changed and the

opening in the bladder, four inches long, was closed by two layers of chromicized cat-gut sutures. The first row was introduced from within the bladder and included the mucous and muscular coats, the knots being in the interior of the bladder. The second row was introduced from the outside, after the manner of the mattress sutures, and included the muscular and peritonæal coats. The wound was disinfected, and there being a large peritonæal flap, it was attached to the bladder, covering the line of sutures, thus making the wound extraperitonæal. After the closure of the abdominal wound a self-retaining catheter was introduced into the bladder, and for ten days convalescence was uneventful except that the catheter was blocked occasionally by a knot from one of the sutures. On the tenth day tumefaction occurred over the lower angle of the abdominal wound, and, on opening it, urine escaped. A vesico-vaginal fistula was formed and the mucous lining of the bladder attached to the mucous lining of the vagina by silk sutures. The abdominal sinus was curetted, disinfected, and sutured. After this closed the sutures which kept open the vesico-vaginal fistula were removed, and the fistula closed quickly without operative interference.

The most dangerous and least often injured portion of the bladder is the region of the trigone. Here a good knowledge of anatomy and surgical technique are necessary in the management of the vesical ends of the ureters.

In the writer's opinion wounds of the bladder should be immediately closed and the operation proceeded with as if nothing had happened. Catgut is the best material for suturing the bladder walls, and no harm will result if the suture is passed through the mucous lining of the bladder. The majority of fatal cases are due to faulty stitching. The Trendelenburg position facilitates the repair of wounds in the posterior wall of the bladder. In extensive intra-peritonæal bladder wounds it is best to drain by a vesico-vaginal fistula, which usually heals promptly when the sutures are removed, as there is no loss of tissue. Where the bladder wound is small, or in the inferior wall, a self-retaining catheter, or the use of a catheter every two or three hours will usually be sufficient.

In pelvic operations, after the administration of the anæsthetic, the surgeon himself should empty the patient's bladder by a catheter. This detail would not only lessen the danger of injuries to the bladder, but when they did occur would lessen the danger of septic infection. Moreover, before closing the wound after an abdominal operation, it is wise to test the bladder for possible injury, by the injection of saline solution or the use of the uterine sound.

Ventral Fixation of the Round Ligaments for Retroversion and Prolapsus Uteri.

A. MONÆ LESSER (*Med. Record*, Oct. 14, 1899) says that the operation herein described is always successful, is more quickly performed, and avoids difficulties which arise from weak ligaments in Alexander's operation, in utero-ventral or other fixation. The uterus is left in free position, and neither its physiological requirements nor its relations to other organs are interfered with.

The instruments required are: scalpel, scissors, long pincettes, artery forceps and small retractors, a long, straight needle with an eye near the point, curved right-angled needle, and a repositor. The right-angled needle is straight from the point to the curve and again from the curve to the eye. The point is sharp and flat. The repositor is in the form of a heavy uterine sound, and consists of a uterine portion about 5 cm. long, standing at an angle of 105° with the vaginal portion. At the angle is a small shoulder, about 2 cm. in diameter, for the support of the uterus when in position. The vaginal portion is slightly curved and stands at an angle with the handle which is long enough to stand horizontally above the field of operation, so that the fingers need not be introduced into the vagina.

The patient is prepared for coeliotomy. Curettage, if needed, is done first. The repositor is placed in the uterus. An incision is made transversely from about 2 cm. inward from a point denoting the internal abdominal ring on one side, to the same point on the other side, and 25 cm. above the pubis. The incision is made down to the aponeurosis of the external oblique. The integument is drawn upward and downward, respectively, and if there are no complications beyond the direct object of the operation, a short, longitudinal opening is made through the linea alba and peritonæum. The uterus is placed in position by the repositor. A silkworm suture is inserted with the curved needle about 0.5 cm. inward from the outer angle of the incised skin, and passed horizontally, not through the skin, but through the muscle, fascia and peritonæum. The outer end of the suture is held by forceps, and the inner indicates the place to which the ligaments must be attached. The ligament can be picked up with pincettes almost opposite the suture, the needle is then carried under and around the round ligament at the required place, taking along the broad ligament covering it. The thread should be long enough to allow the suturing while the

ligament is relaxed again. The curved needle is removed and the eye-point needle passed parallel with, but 1 cm. below, the place of entrance of the first suture. The eye-needle is then threaded with the ascending strand of the suture, which is drawn up and out of the abdomen and held. A second, similar suture through the abdomen and ligament is made 0.75 cm. inward from it; a third suture is passed at the same distance from the second. The distance between the sutures on the outside should be the same as that between the sutures in the ligaments. The ends of the sutures are held outside and not tied until the other side has been similarly treated. When all the sutures are in, the portion of the ligaments and peritonæum between the sutures are scraped with the scalpel that the union may be more firm. The sutures, beginning with the outer one, are drawn up closely and firmly tied. The cut ends are buried under the skin and fascia, which are closed by sub-cutaneous suture. The superficial epigastric may be incised, but that can usually be avoided. The measurements vary slightly in different cases, but the points required are easily recognized after the transverse incision. If any doubt exists as to the course of the deep epigastric artery, one finger may be placed in the abdomen as a guide. A variation of this procedure, which has but little advantage, is to make a transverse incision through the aponeurosis of the external oblique, and separate the fibers of the internal oblique and transversalis in the same direction at the point mentioned above for sutures. The ligament is picked up with pincettes, the external portion drawn up tightly, and the portion toward the uterus drawn up in accordance with its length and requirements. The ligament is then sewed between the fibers of the two inner abdominal muscles, the needle being carried from above the incision through the internal oblique, transversalis, fascia, peritonæum, ligament, and back through the tissues below the incision. The aponeurosis of the external oblique is sewed over it, and the other side similarly treated. The skin and fascia are closed as before. The patient is able to rise by the twelfth day. Hernia could only follow sepsis, or an error in the course of the incisions. Two cases became pregnant four and a half and six months, respectively, after operation. Delivery occurred at full term with no complications, and the uterus remained in correct position afterwards.

GREAT BRITAIN.

The Influence of Prolonged Standing in the Production of Women's Diseases.

J. STUART NAIRNE (*British Med. Jour.*, Sept. 2, 1899) says that many years ago his attention was called to this subject, and that during the past thirteen years, as surgeon to two large hospitals for women in Glasgow, he has been able to ascertain the relation of occupation to disease in a vast number of cases. He was convinced that where women stood for many hours each day, the hyperæmia of the uterus and ovaries at the menstrual period, and the influence of gravity upon the temporarily enlarged organs, led not only to prolapsis uteri, but to other uterine and ovarian derangements. Not only so, but the veins became varicosed and, after a time, various forms of neuritis manifested themselves, due in part, perhaps, to the continuous contraction of dorsal muscles. Anæmia, arising from lack of out-door exercise and the long-continued strain of standing, leading to deterioration of the blood-cells, sets in. Special organs lose their tone, suffer from passive congestion, which passes into acute inflammations in time. While only a comparatively small number of shop-girls break down at an early age, 40 per cent. of married women, who have been shop-girls, come under medical attention for pelvic troubles under thirty years of age. The girls are broken down and wearied, but keep at their work by force of circumstances. After marriage the former conditions tell on them, and marriage, instead of giving them rest, adds fresh congestion to organs already more or less diseased. The same statistics apply to girls and women working in factories where they have to stand all day.

Retention of Urine caused by Retained Menstrual Fluid.

OLIVER SMITHSON (*The Lancet*, Sept. 9, 1899) was called to see a sixteen-year-old girl, who was in great pain and could pass no urine. The abdomen was swollen, and the bladder could be felt nearly up to the umbilicus. Hyoscyamus and bicarbonate of potassium were administered, and the patient placed in a hot bath. No relief being ob-

tained, a large quantity of urine was withdrawn by catheter, after which the pain ceased. A tense, fluctuating swelling projected between the labia. The retention returning, the catheter was used again, and this swelling more carefully examined. It proved to be an imperforate hymen, thick and leathery, which was incised, giving vent to a quantity of dark, viscid menstrual blood. There was no further trouble.

Extra-Uterine Fibroid; Abdominal Section; Recovery.

C. STANSER BOWKER (*Ibid.*) was called to a patient about six months pregnant, who was suffering from intense abdominal pain. A hard, movable tumor, about the size of an orange, was in the mid-line in the hypogastric region. Medication failing to relieve the suffering, the abdomen was opened, a ligature applied between the fibroid and the uterus and the tumor removed. The operation lasted about ten minutes, but two days later labor set in. In order to save the patient from straining the os was dilated and the foetus extracted. Recovery uneventful. The interesting feature in this case was the origin of the pain, as the tumor was merely an extra-uterine fibroid, connected with the fundus, and not, apparently, pressing on any nerve center likely to cause such intense pain.

On Twenty Consecutive Cases of Uterine Myomata.

W. F. VICTOR BONNEY (*Clin. Jour.*, Sept. 20, 1899) protests against a tendency to minimize the dangers of uterine myomata; besides the menorrhagia, these tumors frequently obstruct, inflame, slough or cause pain, a given case usually presenting several of these symptoms. Menorrhagia was present in sixteen out of these twenty cases, in some being merely inconvenient, in others the leading symptom; in one woman of twenty-six it had led to a condition of remarkable anæmia; in one case the menorrhagia was the sole symptom, in a few cases there was intermenstrual loss of blood; and one case, fifty-six years old, and still menstruating, illustrates how a fibroma may prolong menstrual life. Pressure upon the bladder, bowel or abdominal veins, was present in eight cases; in one there was actual cystitis, in another dilatation of a ureter and kidney. Obstinate constipation, pain at stool and cedema of

the legs occurred in several. Six cases exhibited fever, due sometimes probably to insufficient drainage, but in two to inflammatory changes and sloughing, producing really a chronic sapræmia. There was pain in eleven cases, usually abdominal and continuous, sometimes due to the mere weight of the tumor.

Treatment consisted of abdominal hysterectomy in fifteen cases, abdominal myomectomy in three and vaginal enucleation in two. The principle is: removal of the tumor by itself if practicable, or, if that be not safe, with the diseased organ. Oöphorectomy is to be condemned because the bleeding is not sure to cease and may even increase; and because these tumors produce many ill effects besides hæmorrhage, chief of which are septic changes, the likelihood of which is greatest at the close of menstrual life and thus hastened by the operation. Oöphorectomy has only a questionable advantage in being the easier operation, as it may be attempted by unskilled operators; it has a lower statistical mortality than hysterectomy, due to the fact that no account is taken of those cases in which a secondary hysterectomy was necessitated, or of those in which it was found impossible to remove the ovaries; fairly estimated as a life-saving measure in the broadest sense of the term, hysterectomy is far in advance of oöphorectomy. As to the sexual injury, a myomatous uterus is little likely to conceive; should it do so, it can be regarded only as a misfortune, as the patient's life is likely to be imperilled, the tumor to increase rapidly in size and abortion to occur. As to indications for operation we should be guided rather by symptoms than by the size of the growth; usually by the time the former are sufficiently severe to induce the patient to consult a physician, the chances for permanent improvement by palliative measures are very small. The situation of the tumor is to be considered, and fever, foul discharge and pressure symptoms are indications for immediate removal. As to the choice of operation, vaginal enucleation should be chosen for small, submucous tumors, sessile or pedunculated, especially if growing from the cervix; abdominal myomectomy for sub-peritonæal growths if pedunculated, and usually if sessile, but rarely for mural ones on account of hæmorrhage. Vaginal hysterectomy is not to be commended, the mass usually being too large; and abdominal hysterectomy is the operation generally demanded. The broad ligaments are usually found to be stretched and the ovaries hanging very loose and movable; one is usually longer than the other and this should be removed, as the long pedicle is likely to contract adhesions later. If the ovaries are cystic, one, at least, should be removed. Should both be healthy and the pedicles short they should be retained. These cases

convalesce well and the ultimate results are very encouraging, there being a conspicuous absence of the dragging abdominal pain so frequent after other operations and due to adhesions; with low amputation of the uterus, the bottom of the pelvis is left smooth with nothing to form adhesions, and later examination reveals a perfectly movable stump.

FRANCE.

Suprapubic Subperitonæal Total Hysterectomy.

JABOULAY (*Lyon Med.*, Sept. 10, 1899) aims in this operation to protect the peritonæal cavity and intestines from all the manipulations of ablation of the uterus, whether fibromatous or cancerous, and to secure complete hæmostasis. The operation comprises three stages:

I. Sub-umbilical median incision down to, but not through, the peritonæum, extending as far as the pubes.

II. The operator thrusts his hand in front of the bladder under the peritonæum, stripping and pushing back the latter so as to reach the broad ligament; the stripping is pursued into the interior of the broad ligament, the ureter first identified, then the uterine artery, which is tied. Continuing, always close to the peritonæum, one reaches the ovary and tube, and the anastomosis of the utero-ovarian and uterine arteries is sought and ligated. Should the round ligament be in the way (though this has not occurred in the writer's experience) it could be easily cut subperitonæally and freed from its connections with the inguinal canal. The same manœuvres are repeated upon the opposite side. To separate the uterus from the bladder, it is necessary to penetrate into the interior of the broad ligament above the umbilical artery and push the latter downwards and forwards. The finger profits by the denudation of the broad ligament to reach downwards to the vagina, and with the scissors one opens the cul-de-sac, liberating the cervix wholly or in part from its attachments. Sometimes the writer has proceeded differently: after completing the hæmostasis of the broad ligament, the vagina was opened with scissors and the cervix seized with forceps; and after completely reversing the uterus with the cervix up-

wards, he performed the denudation and hæmostasis of the opposite broad ligament, then ligation and excision of the annexa.

III. The dissection of the broad ligament having been accomplished, and the peritonæum being still intact, the cervix is seized with uterine forceps and drawn away from the broad ligament, forward and upward to the side where the operator stands, or upon the median line; the rest of the uterus follows, detaching itself from its surroundings and vessels, until finally it remains in intimate contact only with the annexa (which are tied and cut) and with the peritonæum at its fundus. The denudation is continued till one has the entire uterus with a little of its serous covering. Sometimes the serous coat tears transversely, opening an escape for the coils of small intestine, but they are easily held in place. In case of omental or other adhesions it would be easy to attack them at the end, after a deliberate opening of the pelvic peritonæum; after breaking them up the cavity remains exposed to infection only during the extirpation of the uterus. The transverse peritonæal opening is sutured and the subserous anfractuosity has a sufficiently free drainage through the vagina to protect the overlying peritonæum.

The writer has employed the same proceeding in cases which demanded the removal of diseased annexa, as well as that of the uterus; and in these cases the preliminary mobilization of the uterus and hæmostasis of the pelvis make the necessary intra-peritonæal manoeuvres very simple. This method corresponds to the embryological origin of the uterus, taking into account the fact that it is an organ of subserous development.

GERMANY.

Uterus Duplex Separatus.

MAX OKER-BLUM (*Centralblatt für Gyn.*, Sept. 2, 1899) reports the following case in a woman thirty-four years old. Examination showed a strongly built woman with a wide, normal pelvis and normal vulva and introitus vaginæ. The floor of the vagina was moderately wide with a single common fornix, but without any portio uteri; instead there were at the vault of the vagina two openings about a centimeter

apart, the right surrounded by a firm ring and large enough to admit the tip of the finger, the left smaller and feeling like a navel, with a soft circumference as if covered with vaginal mucous membrane. Bimanual examination showed the woman to be possessed of two entirely separate uteri. The right was of about normal size, as thick as it was broad, and of true pear-shape; the cervix, right tube and ovary seemed normal; there was no special portio uteri, and the left tube and annexa were wanting; the sound passed 7.5 centimeters. The left uterus was smaller, its body firm and round, losing itself in the left tube, with which also the left ovary was connected; it lacked a right ovary and tube; the cervix was soft and relaxed, the portio uteri wanting; through the navel-shaped opening the sound passed 5 centimeters. These two uteri were connected only by a bridge of vaginal wall about one centimeter wide.

The menstrual history was not abnormal. The patient had been married when twenty-six years old and had passed through the following pregnancies: (1) After marriage, menstruated three times, then became pregnant (upon which side not known) and was delivered at term of a female child, now nine years old. (2) During lactation menstruated twice, became pregnant, upon the right side, of a girl delivered at term and now seven years old. (3) One year later, left side pregnancy, the foetus dying in six weeks and being expelled two months later. (4) Four months later, after one menstruation, right side pregnancy, with delivery at term of a girl who lived one hour. (5) Two months later, right side pregnancy, the foetus living six weeks and being expelled two months afterwards. (6) Left side pregnancy lasting eight weeks. (7) A year later, right side pregnancy, the foetal movements being felt for a week and the foetus expelled seven weeks afterwards. (8) In February, 1895, pregnancy on the left side, foetal movements observed in June and ceasing seven weeks later, abortion occurring in October. From these data it would be inferred that the first pregnancy was on the right side.

Incidentally the writer observed that both uteri began to menstruate at the same time. In October, 1895, he performed a curettement of both uteri. At the end of May of this year the woman presented herself, having been pregnant since February in the left uterus; the organ was of the size of a child's head, and the right uterus was also a little enlarged; at the middle of September the mother and foetus were in good condition, but shortly after the foetal movements became weak and on the 25th of that month ceased altogether.

* *Lateral Colpotomy.*

C. H. STRATZ (*Centralblatt für Gyn.*, September 23, 1899) offers a preliminary contribution upon a method of reaching the parametrium through the side of the vagina; the important points are to shun the uterine artery, and, higher in the parametrium, the ureters, also to avoid opening the peritonæum as much as possible, either in the cul-de-sac or the neighborhood of the bladder. The writer proceeds as follows: he first seeks the uterine artery, which is easily made out next to the tumor, especially if the latter be inflamed; then he puts the vagina on the stretch by means of two long, slender retractors before and behind, without further displacing the uterus by drawing down the vaginal portion; he then makes his cut behind and parallel to the uterine artery, its point of origin being to the side of and behind the vaginal portion of the uterus; if one goes too far backward there is danger of opening Douglas' pouch, if too far forward, of injuring the uterine artery or the ureters, which latter are often displaced by the tumor. An incision of from five to eight centimeters being made in the vagina, one can press forward with surprising ease into the parametrium, shell out the tumors, and then by placing the retractors in the parametrium itself expose the whole field to view; an assistant presses the tumor down through the abdominal wall.

The writer has used this method in two cases, one of which was a pyosalpinx of the size of a man's head, which had broken into the rectum, the other a deep intraligamentary myoma complicated by a parametritis following appendicitis. In both cases he noted (1) the remarkable ease of getting one's bearings after division of the vagina; one could feel the uterine artery and ureters as plainly as in an anatomical preparation; (2) that the peritonæum was so easily pushed away by the finger, that there was very slight chance of perforating it, even with considerable force; (3) that the bleeding was very slight, only one ligature being used (in the second case about the pedicle of the tumor); (4) that the vaginal incision was very elastic; in the second case the tumor was from twelve to fifteen centimeters in diameter and was removed through an incision five centimeters long. There was no secondary hæmorrhage nor peritonæal irritation; fever in the first case ceased after operation, the second had no fever before or after. The angles of the wound were transfixed with silk sutures so as to be able to bring them down at the subsequent dressing; probably a re-

tractor could have been used for the same purpose. The intention in the first case had been to suture the empty pus sac to the vagina secondarily, but this was rendered superfluous, as after three days spontaneous union took place around the tampon. Drainage through the vagina was thus assured and the fistula into the rectum was healed in three weeks.

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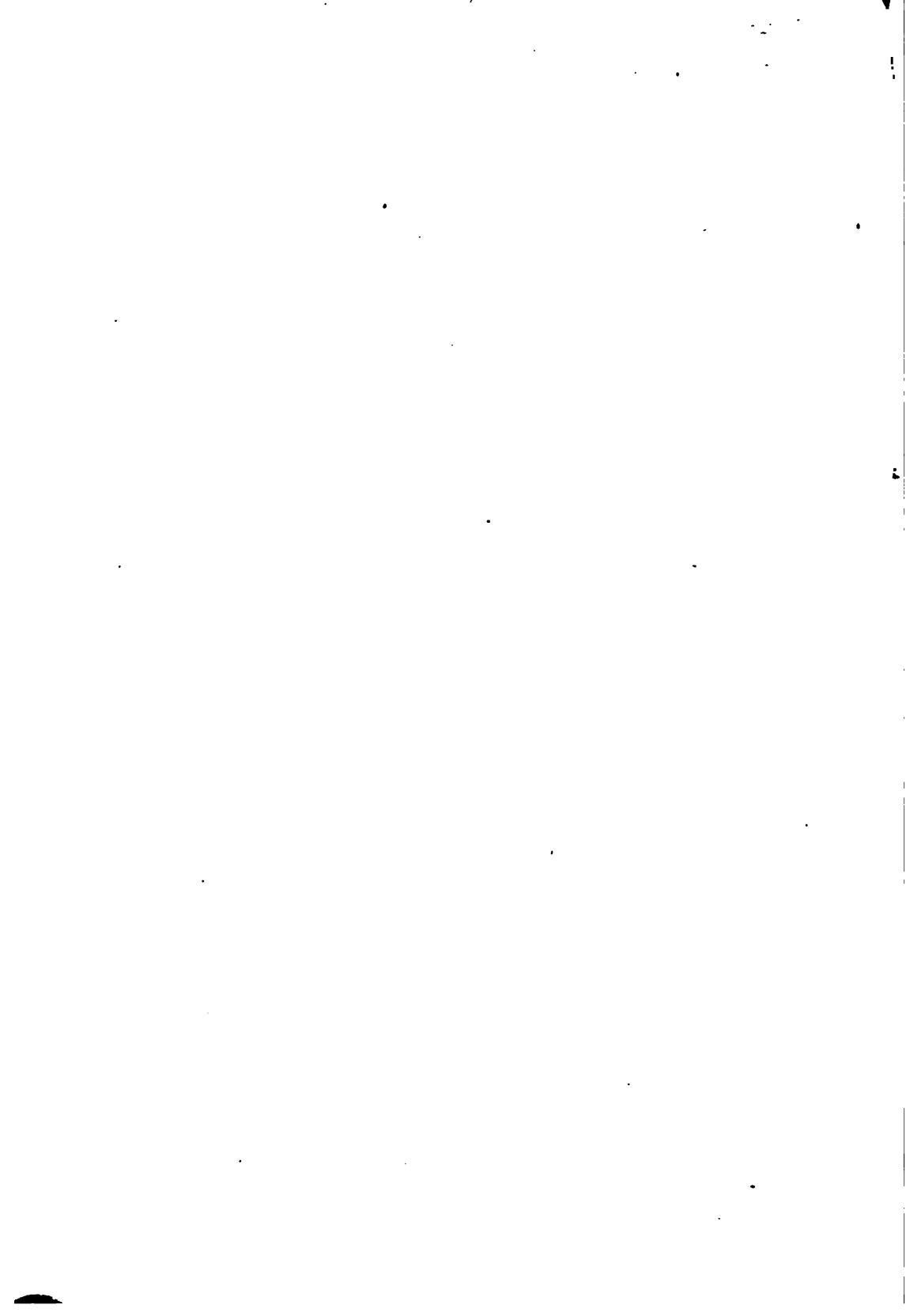
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